

THE NEW YORK  
PUBLIC LIBRARY  
ASTOR LENOX TILDEN FOUNDATION  
1892







Digitized by the Internet Archive  
in 2015

<https://archive.org/details/journal1415manc>





THE  
JOURNAL  
OF THE  
MANCHESTER GEOGRAPHICAL  
SOCIETY.



VOL. XIV.

MANCHESTER:  
PRINTED FOR THE MANCHESTER GEOGRAPHICAL SOCIETY.  
1898.

615438

21.7.55

THE

# COUNCIL AND OFFICERS

OF THE

## MANCHESTER GEOGRAPHICAL SOCIETY

FOR 1898.

### President.

His Royal Highness the DUKE OF YORK., K.G.

### Vice-Presidents.

His Eminence CARDINAL VAUGHAN.  
His Grace the DUKE OF DEVONSHIRE, K.G.  
The Right Hon. the EARL OF DERBY, K.G.  
The Right Hon. the EARL EGERTON OF TATTON  
The Right Rev. the LORD BISHOP OF MANCHESTER.  
The Right Hon. the LORD MAYOR OF MANCHESTER.  
His Worship the MAYOR OF ECCLES.  
His Worship the MAYOR OF HEYWOOD.  
His Worship the MAYOR OF OLDHAM.  
His Worship the MAYOR OF SALFORD.  
The VICE-CHANCELLOR of the VICTORIA UNIVERSITY.  
The PRINCIPAL OF OWENS COLLEGE  
The Right Rev. MONSIGNOR GADD, V.G.  
The Right Hon. Sir JAMES FERGUSON, Bart, C.I.E., M.P.  
The Right Hon. A. J. BALFOUR, M.P.  
The Right Hon. JACOB BRIGHT.  
Sir W. H. HOULDSWORTH, Bart., M.P.  
Sir HUMPHREY F. DE TRAFFORD, Bart.  
Sir F. FORBES ADAM, C.I.E.

Alderman SIR BOSDIN T. LEECH, J.P.  
Alderman SIR JOSEPH LEIGH, J.P.  
Mr. B. ARMITAGE, J.P., Chomlea.  
Mr. GILBERT BEITH.  
Mr. FREDERIC BURTON.  
The Very Rev. L. C. CASARTELLI, M.A., Ph.D.  
Mr. F. CAWLEY, M.P.  
Professor W. BOYD DAWKINS, M.A., F.R.S.  
Professor T. H. CORE, M.A.  
Mr. W. H. HOLLAND, M.P.  
Mr. HENRY LEE, J.P.  
Mr. WILLIAM MATHER, M.P.  
Mr. SAMUEL OGDEN, J.P.  
Mr. HERBERT PHILIPS, J.P.  
Mr. FRITZ REISS.  
Mr. C. E. SCHWANN, M.P.  
Mr. C. P. SCOTT, M.P.  
Rev. S. A. STEINTHAL, F.R.G.S., F.I.Inst.,  
*Chairman of the Council.*  
Mr. T. R. WILKINSON, *Vice-Consul for the Ottoman Empire.*  
Mr. F. ZIMMERN.

### Trustees.

Mr. Councillor S. H. BROOKS, F.I.Inst.

Mr. SIDNEY L. KEYMER, F.R.G.S.

Mr. E. W. MELLOR, J.P., F.R.G.S., F.I.Inst.

### Honorary Treasurer.

Mr. S. OPPENHEIM, J.P., (Vice-Consul for Austria-Hungary).

Mr. J. E. BALMER, F.R.G.S.  
Mr. C. H. BELLAMY, F.R.G.S.  
Mr. J. C. BLAKE, F.R.G.S., F.I.Inst.  
Mr. Alderman I. BOWES.  
Mr. G. T. BOWES.  
Mr. J. C. CHORLTON.  
Mr. H. T. CROOK, C.E.  
Mr. THOMAS DENTITH.  
The Chevalier R. FROELICH, K.C.I.,  
Italian Consul.  
Mr. Councillor T. HASSALL.  
Mr. N. KOLP.

Mr. J. E. KING, M.A. High Master, Manchester Grammar School.  
Lady LEECH.  
Mr. D. A. LITTLE.  
Mr. T. C. MIDDLETON, J.P.  
Mr. HARRY NUTTALL, *Vice-Chairman of the Council.*  
Mr. R. C. PHILLIPS.  
Mrs. PICKERING.  
Mr. J. THOMPSON.  
Mr. ANGELO WADDINGTON.

### Honorary Secretaries.

Mr. F. ZIMMERN.

Mr. J. D. WILDE, M.A.

Mr. J. HOWARD REED.

### Honorary Auditors.

Mr. WILLIAM ALDRED, F.C.A.

Mr. THEODORE GREGORY, F.C.A.

### Secretary and Editor.

ELI SOWERBUTTS, F.R.G.S., F.I.Inst., 16, St. Mary's Parsonage, Manchester.

### Honorary Local Secretaries.

South Manchester and Moss Side, Mr. J. HOWARD REED.  
Oldham, Mr. F. RIGG.  
Lytham, Mr. J. T. LIGHTWOOD.  
Stockport, Mr. T. H. RATHBONE.  
Heywood, Mr. G. FAIRBROTHER.

Leigh, Tyldesley, &c. Mr. J. WARD.  
Urmston and Flitton, Miss A. E. LAW.  
Leeds, Mrs. JESSIE E. SHRIVE.  
Blackpool and Neighbourhood, Mr. J. RIGBY.  
Ashton and Stalybridge, Mr. C. T. I. GARNER.

# CONTENTS.

	PAGE
Accrington to Longridge, Drive from	311
Adam, Sir F. Forbes—China	111
Africa, Bende	190
— Benin Punitive Expedition	208
— Oran	99
— South	380
— Dr. C. Peters' Journey	383
— Transvaal, Statistics	360
— Uganda	99
African Elephant, Domestication of the	285
Albrow, H. J.—New Russian Timber Port, Oserka	225
Albums added to Library	405
America, Brazil in 1898	321
— British Columbia	100
— British Columbia and Klondyke	236
— Yukon	236
André's Balloon, Was it?	84
Annual Dinner at the Queen's Hotel	111
Annual Meeting of the Society	101
Architecture of the English Cathedrals—C. H. Bellamy, F.R.G.S.	381
Aro People, Bende	206
Asia, Ceylon	374
— China	110, 113, 237
— Cotton Trade	254
— Voyage up the Yang-tse-Kiang	361
— India, Recent Plague Epidemics	130
— The Taj, Agra	307
— Irawaddy and Mekong Rivers, Upper Waters	101
— Japan, Cotton Trade	255
— Persia	176
— Tibet, Western	1
Atlases added to Library	405
Australian Weather Guide	97
Australia, Queensland	222, 367
Australasia, Tasmania, Furneaux Islands	355

## B

Bacilli of the Plague	133
Balance Sheet for 1897	102
Balance Sheet for 1898	394
Barometer, New Mountain Aneroid—E. Whympor	384
Bathing Boys at St. Vincent	324
Belgium, Travels in	379
— Visit of Members to	310
Bellamy, C. H., F.R.G.S.—Travels in Spain	378
— Architecture of English Cathedrals	381
Bende, Cotton Growing and Native Manufacture of Cloth	200
— Council of Peace to swear Ju-Ju	194
— Description of the Aro People	206
— Europeans on Show at Uru-Ape	191
— Fine Ju-Ju House	201
— Government Demands	203
— Ju-Ju	190
— Notes on a Journey to—Major A. G. Leonard	190
— Palaver with Ibo Chiefs	192
— Strutting Aro Man	191
Benin City	217
— Destruction of Ju-Ju Houses	219
— Human Sacrifices (Female) near	218
— Diary of March and Events on route, February, 1897	209

## PAGE

Benin, Punitive Expedition, Diary of a Surgeon with—F. N. Roth, M.R.C.S.	208
Ben Nevis Observatory, Proposed Closing	221
Bergen, Fishery Exhibition, 1898	231
Birdwood, H. M., C.S.I., &c.—Recent Epidemics of Plague at Bombay	130
Black, Surgeon-Major W. G.—Christmas and New Year Weather at Edinburgh	365
— Ocean Rainfall by Rain-Gauge Observations, 1864-81	36
— Prevalence of Northerly Winds and Snow Storms during the Spring	303
Boggart Hole Clough, Description of	239
Bombay, Recent Epidemics of Plague—H. M. Birdwood, C.S.I., &c.	130
— Trade, 1881-1897	242
Books (see Reviews).	
Books added to Library—	
— General	406
— British Isles	407
— Europe	408
— Asia	410
— America	411
— Africa	410
— Oceania	412
Boraston, John Macclair—Brazil in 1898	321
Brazil, Government, &c.	340
— in 1898—John Macclair Boraston	321
— Olinda, Convent	335
— Pernambuco	327, 330
— Rio de Janeiro	337
— Yellow Fever	345
Brierley's Statue in Queen's Park Visited	240
Bristol and the British Association, by the Secretary	383
— and British Association Meeting, Report by the Delegate	312
British Association and Description of Bristol, by the Secretary	383
— Meeting at Bristol, Brief Notes of Papers read	313
— Columbia and Klondyke—W. Ogilvie	235
— —Rev. T. F. Nicholas	100
— Geographical Societies—Rev. S. A. Steinthal	110
Brussels, New University (Geographical Institute)	226
Bullock, Consul T. L.—Geography of China	113, 237
Burns, The Land of, with Vocal Illustrations—William Harper	382
Bushire	187

## C

Calcutta Cotton Trade	249
Canadian Minerals Presented to the Commercial Museum by the Imperial Institute, List of	377
Caravan Routes and Road Making in Persia—Lieut.-Col. H. L. Wells, R.E., C.I.E.	176
Ceylon—Sir J. J. Grinlinton	374
Children's Lecture on the Elephant by the Secretary	389
China and the Foreign Powers	129
— Boundaries	114
— Cart Roads in Shansi	122
— Climate and Productions	119

	PAGE
China, Consul Bullock .....	236
— Crops .....	120
— Desert of Gobi .....	114
— Dr. A. W. Ward .....	237
— Exports of Cotton Goods and Rates of Freight .....	254
— Foot Binding .....	364
— Geography of—Consul T. L. Bullock .....	113
— Hoang-ho or Yellow River .....	118
— Lakes Tungting and Poyang .....	118
— Loess Lands .....	121
— Lolos in Southern Szechuan .....	115
— Manchus and other Tartar Tribes .....	113
— Mineral Wealth .....	126
— Mountain Ranges .....	124
— Mrs. A. J. Little .....	361
— Names (and Meaning) of Various Provinces .....	116
— Proper—Description .....	113
— River System .....	117
— Sir Frank Forbes Adam .....	111
— Sir Richard Temple .....	110
— The Great Plain .....	127
— The Han River .....	118
— The Huai River .....	119
— The Yellow River and Inundations .....	128
— Voyage up the Yang-tse-Kiang .....	361
— Waterways .....	119
— West River of Canton .....	119
— Yang-tse River, its Rise and Course .....	116
Chinese and Inferior Races .....	115
— Empire—Divisions .....	113
— Famines .....	123
— Pamirs .....	114
— Provinces, How to Remember Names of .....	116
— Religion .....	362
— Turkestan .....	115
Christmas and New Year's Weather at Edinburgh .....	365
Climatic Influence on the Plague, with Tables .....	140
Cleghorn, Dr.—Study of Plague .....	154
Commercial and Geographical Museums. By the Secretary .....	380
Commercial Geography .....	264
Committee of 1892-3, Lack of Attention to the Matter of Names in Ordnance Maps .....	300
Convent of Mount Carmel, Ohindo, Description and Festivals .....	335
Corcovado, The, at Rio de Janeiro .....	338
Correspondence .....	226, 228, 372, 377
Corresponding Societies, List of .....	413
— British .....	413
— Missionary .....	415
— Colonial .....	415
— Foreign .....	416
Cotton Trade of Bombay, Calcutta, &c. .....	249
Cotton Trade of China and Japan .....	254
Council and Officers of the Society, 1898 .....	109
Council and Officers of the Society, 1899 .....	396
Crook, Henry T., M.Inst. C.E.—The Orthography, Location, and Selection of Names for the National Maps .....	297
Cuba, Geographically, Historically, and Commercially—J. Howara Reed .....	383
Curious Blunder as to "T'Owd Lone" .....	298
D	
Decle, L.—South Africa .....	380
Disinfection after Plague, with Illustrations .....	152
Dobcross, Visit to Greenfield, Lydgate, Delph, and Dobcross, and Reception by Mr. Dentith, at Longhouse, Dobcross .....	311
Domestication of African Elephant—M. F. Bourdairie .....	285

	PAGE
Eclipse, Total, of Sun at Jeur .....	92
Economic Geography in British Educational System .....	266, 267, 268, 269
— in Elementary Schools .....	287
— in Foreign Educational Systems .....	269
— in the Commercial Schools, College, and in the University .....	288
Edinburgh, Christmas and New Year's Weather .....	365
Education, the Position of Economic Geography in .....	286
Elephant, African, Domestication of the .....	285
— Children's Lecture by the Secretary .....	389
England, Boggart Hole Clough .....	239
— Middleton .....	240
— Ordnance Survey .....	297
— Queen's Park, Ben Brierley's Statue .....	240
Errors in Scotch Maps .....	300
<i>Essays at Eventide. By Thos. Newbrigg.</i> .....	224
Europe, Belgium .....	379
— Sardinia .....	379
— Scotland .....	382
— Spain .....	378
Examination, Geographical, Yorkshire, Report .....	397
Exchanges with other Societies, &c., see Corresponding Societies .....	413

## F

Fairfield Moravian Institute, Visit to and Description of .....	304
Finchwood, Marple, Visit to .....	307
Fishery Exhibition at Kergen, 1898 .....	231
— Salford .....	239
Foot-binding among the Chinese .....	364
Furneaux Group of Islands, the Tasmanian Half Castes .....	355

## G

Galloway, John R.—Shipping Rings and the Manchester Cotton Trade .....	241
Gateacre, General, and the Plague in Bombay .....	158
Geographical and Commercial Museums .....	293
— Association, Annual Meeting, 1897 .....	292
— Education and Geographical and Commercial Museums .....	293
— Examination, Yorkshire Union of Institutes 1899, Report of Examiner .....	397
— Societies of Britain — Rev. S. A. Steinthal .....	110
Geography Applied, Report on Teaching of .....	264
— Economic, in British Educational System .....	266
— in Foreign Educational Systems .....	269
— in Education, the position of Economic .....	286
— Replies to Questions in Children's Corner, 1898 .....	399
Gobi Desert .....	114
Government of Brazil and Political Parties .....	340
Greece, Musical Philosophy of Ancient .....	57
— Stringed Instruments of Ancient Greeks .....	60
Greek Music, Claudius Ptolemy on the limma .....	58
— System of Archytas .....	70
— Fables of Alpyus .....	69
— Philosophers on Musical Theory .....	79, 80
Greenwood, Alderman J.—Old Halls in Pendle Forest .....	389
Greenwood, Capt. W. N.—The Unification of Time at Sea .....	24
Grinlinton, Sir John J., A.I.C.E., F.R.G.S., &c.—The Island of Ceylon .....	374



H	PAGE		PAGE
Harper, Wm.—The Land of Burns.....	382	Mekong River, Upper Waters of—Sir R. Temple.....	101
Han River, China.....	118	Meteorology of Western Tibet.....	2
Herbertson, A. J., Ph.D., F.R.S.E., F.R.G.S.—Report on the Teaching of Applied Geography.....	264	—Prevalence of Northerly Winds and Suow Storms during the Spring—Dr. W. G. Black, Edinburgh.....	303
—The Position of Economic Geography in Education.....	286	Middleton and St. Leonard's Church.....	240
Hoang-ho, or Yellow River.....	118	—Parish Church (St. Leonard's).....	88
I		Mineral Wealth of China.....	126
Ibo Chiefs.....	192	Missionaries and Geography.....	264
India, The Plague in Bombay.....	130	Moravian Institute, Fairfield, Visit to and Description of.....	304
—The Taj, Agra.....	307	Mortality from Plague.....	144
Irawaddy and Mekong Rivers, Upper Waters of—Sir Richard Temple.....	101	Mound Builders.....	86
Island of Ceylon—Sir J. J. Grinlinton.....	374	Mountain Ranges in China.....	124
J		Mullen, B. H., M.A.—Salford Fishery Exhibition.....	239
Japan, Exports of Cotton Goods and Rates of Freight.....	255	Museum, Canadian Minerals Presented to the.....	377
Jeur, Total Eclipse of Sun.....	92	Museums, Geographical and Commercial.....	293
Jews in the World, 1899, an estimate of the Number.....	364	Musical Philosophy of Ancient Greece—R. C. Phillips.....	57
K		N	
Karum River, Persia.....	188	Names in Ordnance Maps.....	297
"King Solomon's Golden Ophir, by Dr. Carl Peters".....	354	New Zealand, letter from Mr. S. Chadwick.....	372
L		Nicholas, Rev. T. F.—British Columbia.....	100
Ladak, Bazaar at.....	22	Nicholls Hospital, Visit to.....	304
Lady's, A, Notes on residence in Queensland.....	222, 367	Nile, The, with reference to Fashoda and the Bahr el Ghazel—J. Howard Reed.....	380
Lancashire Trade.....	241	"Notes on the Folk-Lore of the Fjort, by R. E. Dennett".....	371
Lectures by Victorians.....	112	O	
Leighton, Rev. J.....	111	Ocean Rainfall by Rain-gauge Observations at Sea, 1864-1881—W. G. Black, S.M., F.R.M.S.....	36
Leonard, Major A. G.—Notes of a journey to Bende.....	190	Ogilvie, W.—British Columbia and the Klondyke.....	235
Library, Additions to.....	461	Olindo, Convent of Mount Carmel.....	335
Lingam Stones, Ludworth Moor and Disley: Description by Mr. Joel Wainwright, J.P., and Visit to.....	305	"On the Broads, by Annie B. Dodd".....	207
Little, Mrs. A. J.—Voyage up the Yangtse River.....	361	Oran, Geographical Celebration at.....	99
Local Knowledge Necessary to Secure Correct Names.....	300	Ordnance Maps.....	297
Lolos in Southern Sechuan.....	115	Oserka, a new Russian Port for Export and Forest Products—H. J. Albrow.....	225
London, Plagues from 1543 to 1665.....	166	P	
M		Pamirs, Chinese.....	114
"Man and his Work, by Mr. and Mrs. Herbertson".....	371	Pendle Forest, Old Halls in—Alderman J. Greenwood, J.P.....	389
Manchester Cotton Trade and Shipping Rings.....	241	Pernambuco, General Description.....	330
Manchester Geographical Society in relation to a Commercial Museum.....	293	—The Mail s.s.....	327
Manchus.....	113	Persia, Bushire, Turbulence of its People, with Examples.....	187
"Maples Rev. Dr. C., Life of, by Miss Maples, with Illustrations and Index".....	23	—Caravan Routes and Road-making—Lt. Col. H. L. Wells, R.E.....	176
Maps added to Library—		—Lines of Russian Advance.....	179
—General.....	401	—Methods of Travel and Conveyance of Goods.....	179
—Europe.....	401	—Physical Configuration.....	176
—Asia.....	402	—Passes into, from the Caspian.....	181
—Africa.....	403	—Rest-houses and their Discomforts.....	184
—America.....	404	—Road through Resht, Difficulties and eventual Success.....	185
—Oceania.....	405	—The Karu River and Rontes.....	188
Maps, Names in Ordnance.....	297	—Work of British Roads Company.....	183
Medical Treatment of Plague.....	137	Peters, Dr. Carl, Letter in reference to his Intended Journey.....	383
"Mediterranean Days, by S. Wells, F.R.G.S.".....	189	Phillips, R. C.—The Musical Philosophy of Ancient Greece.....	57
Meetings, Reports of.....	101, 111, 231, 304, 374	Plague in Bombay and its Remedies—Dr. A. W. Ward.....	238
		—General Gateacre's call for Volunteers and the Noble Respond.....	158
		—Series of Tables Relating to.....	144

	PAGE
Plagues in London from 1543 to 1665, History of, and Bills of Mortality..	166
Plague, Study of—Dr. Cleghorn .....	154
— the, an Expanding Epidemic .....	163
— the Recent Epidemics in Bombay— H. M. Birdwood, C.S.I., LL.D., M.A. ....	130
Position of Economic Geography in Education—A. J. Herbertson, F.R.S.E., &c. ....	286
Proceedings of the Society, ...111, 231, 304,	374

## Q

Queensland, a Lady's Notes on Residence..	222, 367
---	----------

## R

Rainfall and Temperature in Relation to Plague .....	142
Rebates in Bombay Trade .....	248
Recife Reef, near Pernambuco .....	328
Reed, J. Howard—Cuba .....	383
Religion of the Chinese .....	362
Report of Examiner on Geographical Examination, Yorkshire Union of Institutes, 1899 .....	397
— on Replies to Geographical Questions in Geography, 1898 .....	399
Report of the Society for 1897 .....	104
— for 1898 .....	390
Report of Victorians to the Council, 1897-8 ..	107
— 1898-9 .....	399
Report to the Council of the Manchester Geographical Society on the Teaching of Applied Geography— A. J. Herbertson, F.R.S.E., F.R.G.S. ....	264
Resht, Persia .....	185
Reviews and Notices of Books, &c.....189, 207, 224, 354,	371
Rio de Janeiro, Description of Bay .....	337
— Description of City and Topography ..	337
Rivers of Western Tibet .....	6
River System of China .....	117
Roeder, C.—Presentation of Roman Remains .....	380
Roman Remains given to the Museum by C. Roeder .....	380
Roth, Felix N., M.R.C.S., L.R.C.P.—Diary of a Surgeon with the Benin Punitive Expedition .....	208
Russia in relation to Persia .....	179
— Oserka, a new Port .....	225

## S

Salford Fishery Exhibition, description by B. H. Mullen, M.A. ....	239
Sandhurst, Lord, and the Plague in Bombay ..	165
Sardinia, Recent Visit to—S. Wells, F.R.G.S. ....	379
Scholfield, A. Y.—Travels in Switzerland..	381
Scotch Maps, Errors in .....	300
Scotland, Ben Nevis Observatory .....	221
— Land of Burns—W. Harper .....	382
Szechuan, Lolos in Southern .....	115
Shawe, F. B.—Western Tibet .....	1
Shipping Rings and the Manchester Cotton Trade—John R. Galloway .....	241
Smith, John, and the Furneaux Islands ..	356
Smith, Rev. F. C.—Letters from Uganda..	99
South Africa—Lionel Deele .....	380
Spain, Travels in .....	378
Steinhil, Rev. S. A.—Geographical Societies of Britain .....	110
Stephens, Edward—The Tasmanian Half-Castes of the Furneaux Islands ..	355

	PAGE
Stoneyhurst College, Reception by Father Sidgreaves, S.J. ....	311
Switzerland, Travels in—A. Y. Scholfield..	381

## T

Tasmanian Half-Castes of the Furneaux Islands—Edward Stephens .....	355
Teaching of Applied Geography, Report on ..	264
Temple, Sir Richard—China .....	110
Temple, Sir R.—The Upper Waters of the Irawaddy and Mekong Rivers ....	101
The Orthography, Location, and Selection of Names for the National Maps— Henry T. Crook, M.Inst.C.E.....	297
The Taj, Agra, Description of—Mr. Joel Wainwright, J.P. ....	307
Thomson, Joseph, a Biography by his Brother ..	80
Tibetan Village .....	10
Tibet, Passes into (Particularly Cash- merian) .....	8
— Population, Dress, &c. ....	19
— Routes into Western .....	23
— Western, Agriculture .....	11
— F. B. Shawe, M.R.A.S. ....	1
— Meteorology .....	2
— Rivers with Outflow .....	6
Transvaal, Area, Population, Religions, &c. ....	360
Travels in Belgium, by the Secretary ..	379
— in Spain—C. H. Bellamy, F.R.G.S. ..	378
Turkestan, Chinese .....	115

## U

Uganda, Letters from Rev. F. C. Smith ..	99
Unification of Time at Sea—Captain W. N. Greenwood .....	24

## V

Vasco da Gama, Committee's Publication..	233
Victoria (Espírito Santo), Brazil, Visit to ..	348
Victorian Lectures .....	112
Victorians, Lectures and other Work .....	296
— Report, 1897-8 .....	107
— 1898-9 .....	399
Voyage to Brazil, calling at French and Portuguese Ports .....	321

## W

Wainwright, Joel, J.P.—Description of Lingam Stones, Ludworth Moor ..	305
— Description of the Taj, Agra .....	307
Ward, Dr. A. W.—China .....	237
— Plague of Bombay .....	238
Waterways of China .....	119
Weather Guide, Australian .....	97
Wells, Lt. Col. H. L., R.E., C.I.E.—Caravan Routes and Road Making in Persia .....	176
Wells, S., F.R.G.S.—Visit to Sardinia .....	379
Welsh Maps, Names in .....	300
West River of Canton .....	119
Whynper, E.—New Mountain Aneroid Barometer .....	384
Work of Manchester Geographical Society relating to Commercial Education and Geographical and Commercial Museums .....	293
Wrong Names in Maps .....	298

## Y

Yang-tse River, its Rise and Course .....	116
— Voyage up—Mrs. A. J. Little .....	361
Yellow Fever in Brazil, a Great Scourge ..	345
Yellow River and Inundations .....	128
Yukon—W. Ogilvie .....	236



## MAPS AND ILLUSTRATIONS.

Chairman of the Council, The Rev. S. A. Steinthal, F.R.G.S., F.I. Inst., Portrait .....	331
Map Illustrating Unification of Time .....	25
Musical Notes .....	59, 64
Table of Greek Musical Characters—Chromatic .....	78
————— Diatonic .....	77
Ocean Rainfall, Regions and Zones .....	56
————— General Monthly Summary, Table I. ....	35
————— Atlantic Ocean, Monthly Summary, Table II. ....	38
————— Indian Ocean, Monthly Summary, Table III. ....	39
————— Austro-Chinese Seas, Monthly Summary, Table IV. ....	39
————— Pacific Ocean, Monthly Summary, Table V. ....	40
————— Atlantic Ocean, Zonal Summary, Table VI. ....	40
————— Indian Ocean, Zonal Summary, Table VII. ....	41
EUROPE—	
England. Diagrams of Mortality in London Plagues, 1543-1645. ....	166
———— Disley Moor, View of Lingam Stones .....	306
———— Ludworth Moor, View of Lingam Stones .....	305
———— Elevation and Plan to Scale of the Stones .....	305
———— View of Finchwood, Marple, from Rose Garden .....	307
AMERICA—	
André's (?) Balloon in North West Canada .....	86
ASIA—	
Chinese Empire, Map .....	129
India. Agra, View of the Taj Mahal .....	308
———— Bombay Plague, Map of Bombay, showing the Districts Divided for Administration .....	159
———— Diagrams showing deaths of Hindus, Hindus Half-caste, Mussulmans, Parsees and Europeans .....	151
———— Mortality from Plague and from Ordinary Causes Nos. I., II., III. ....	145-148
———— Appendices, Mortality in other Plagues, 1543-1645 .....	166
———— Diagram by Genl. Gatacre of Visitation of Plague in Mortality, Temperature, Humidity, Wind Velocity, and Cloud .....	144
———— Disinfection of Houses by Flushing .....	152
———— Disinfection of Houses by Lime Washing .....	153
———— Family struck by Plague whilst in Flight .....	157
———— House condemned as unfit for human occupation and closed .....	154
———— House in De Lisle Road from where 53 Dead Plague Patients were taken .....	153
———— House in Mandvi District where Plague was first discovered in 1896 .....	139
———— Municipal Hall, Bombay .....	152
———— Plague Bacilli in an Infected Gland .....	133
———— Plague Hospital .....	160
———— Plague Party at Work, Mr. Birdwood in front of the Party .....	159
———— Removal of a Family to a Segregation Camp .....	155
———— Sketch Map of the Western Himalayas .....	2
———— Section through the Western Himalayas .....	4
———— on Route from Srinagar to Leh .....	8
———— Ladak, Cantilever Bridge (Kargil) .....	14
———— Diagram of a Fan Valley .....	9
———— Female Costume (Ladaki Buddhist) .....	18
———— Indus Valley Scenery .....	13
———— Types of Ladaki .....	16
———— Ladaki Architecture .....	12
———— Village (Saspola) .....	10
Persia, Section through .....	178
———— Telegraph Map .....	177
Tibet, Western, View of Typical Plateau .....	5
———— View of Leh .....	20

\* \* THE WRITERS OF PAPERS ARE ALONE RESPONSIBLE FOR THEIR OPINIONS.

ALL RIGHTS RESERVED.



# THE JOURNAL

OF THE

## MANCHESTER GEOGRAPHICAL SOCIETY,

---

### WESTERN TIBET.

By F. B. SHAWE, M.R.A.S.

[Addressed to the Society, Wednesday, January 26th, 1898, in the Library.]

IN approaching our subject, an initial difficulty seems to be the designation to be given to it. We all know the name Tibet, but the inhabitants of Tibet and surrounding countries do not know the name. The Tibetans themselves call their country Bod, and the people Bod-pa; but they greatly restrict the meaning of the term, designating by it only what we now call Chinese Tibet—indeed, not even the whole of that country. If you glance at a map of Chinese Tibet, you will see at once that whilst the boundaries to the north, south, and east are natural ones, that on the west is purely artificial. It is due almost entirely to the conquests of the Maharajah of Kashmir, who, about fifty years ago, annexed the whole of the western provinces. Since they are inhabited by people of the Tibetan type, who speak the Tibetan language, profess the Tibetan form of Buddhism, and owe spiritual allegiance to the Grand Lama, we are in every way entitled to call them “Western Tibet.” Whilst Chinese Tibet is closed to foreigners, Western Tibet is open to travellers and sportsmen, and, with some restrictions, to resident Europeans.

Western Tibet does not, however, comprise all the districts lying in the western portion of the Himalayas. The valleys of Kashmir and Chamba, not being in any sense Tibetan, do not come within our subject. Nor do we concern ourselves with Lahaul and Spiti, although they are inhabited by Tibetans. The rest of the country, *i.e.*, the north-eastern portion, is divided into two parts. The northerly part, called Baltistan or Little Tibet, though inhabited mainly by Tibetans, has for centuries been attached to Kashmir, and differs in many respects from the other part, which is known to Europeans as “Ladak.” It is with this latter part that we propose to occupy ourselves. But here, again, we find that European nomenclature differs

VOL. XIV.—Nos. 1-3—JAN. TO MARCH, 1898.

largely from that of the natives. They understand by Ladak only the valley of the Indus, some indeed restricting the term to the district immediately around Leh, the capital. The district north of this is called Nubra; east of Nubra lies the lofty Chang-chenmo Valley, and south of this Rudok, the plateau of the Pangkong Lake. The districts south of the Indus are Rupshu and Zangskar. All these districts naturally form the Ladak Wazarat, as their waters all flow into the Indus. The district of Purig, although naturally belonging to Ladak, has for centuries been reckoned as part of Baltistan; but as its waters drain into the Indus, and as it forms the natural entrance



SKETCH MAP OF THE WESTERN HIMALAYAS.

to Ladak, we include it in our brief account of Ladak or Western Tibet, *i.e.*, of those portions of the Indus basin which lie within Kashmir territory, south-east of and above Baltistan.

It is evident that the mountains will be a leading point in any account of the country, and we have the great advantage of being able to refer to the maps published by Government in the "Atlas of India," on the scale of four miles to the inch. Viewed on this map, the mountains seem to be exceedingly complex; but several chains may be distinguished, and in order to avoid excessive detail I have ventured to set out on the accompanying sketch map what seem to be the leading features.



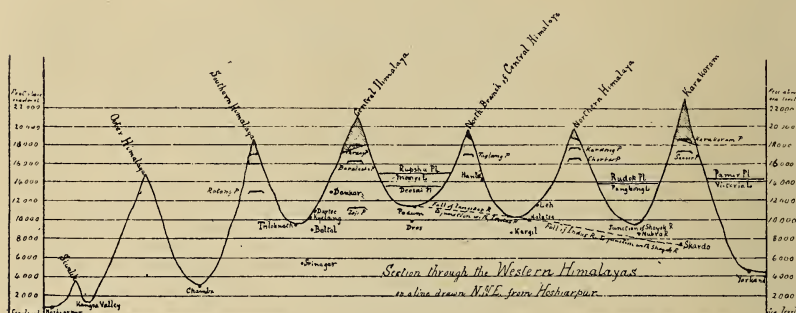
It is desirable to recall the fact, that what we know as the Himalayas consists of a series of parallel ranges. Sir Clements Markham, speaking of Chinese Tibet, enumerates the Northern Chain, the Central Chain, and the Southern Chain. The Northern Chain separates the basin of the Brahmaputra from the great northern plateau; the Central Chain forms the southern watershed of that river, whilst from its southern slopes spring many rivers, which force their way through the Southern Chain to the plain of Bengal. All these chains approach very near together near the Nanda Devi and Kailas Peaks, and then separate again in a westerly direction.

In the western portion we find the Central and Southern Ranges very distinctly marked. The Northern Range has diverged very considerably, and forms the northern watershed of the Indus. In front of the Southern Range there is a very considerable range, which, following Cunningham, I have called the Outer Range. At the extreme north we find mountains connected with the Karakoram system. Lastly we find—and this is a matter of some importance—that the Central Range has thrown off a northern branch. It is exceedingly irregular, but as it forms a boundary to the Indus valley quite as distinctly as the Northern Range, it may claim an equal distinction. The space between the Central Range and its northern branch was originally undoubtedly a vast plateau. This plateau still remains in the north-east as the Deosai Plain (13,400ft.), and in the south-west as the Rupshu Plateau (15,000ft.). It continues beyond the Tibetan frontier, but we have no detailed information about it. Between these two plains the country has been torn up and worn down by the action of the Dras, Suru, and Zangskar Rivers, so that we now find there a vast wilderness of mountains, which we might feel inclined to compare with the waves of a mighty ocean, were it not that the waves follow regularly one upon the other, whilst the mountains appear rather as a huge tangled skein.

Cunningham gives the mean height of the Outer Himalaya as 15,020ft. For the Southern Range from Kishtwar to the Rotang Pass I find the mean height of the peaks to be about 18,600ft. The determination of the mean height of the peaks belonging to the Central Range between the Zoji Pass and the frontier is not easy, as most of them have not been measured by the Trigonometrical Survey, or at least the altitudes have not been entered on the map; but considering that the Nun Kun peaks on the west rise to upwards of 23,000ft., and peaks near the Parang Pass on the east to the same height, whilst the intervening summits do not appear to be much less, we shall hardly be overstating the mean altitude if we put it at 21,000ft. The northern branch of the Central Range, between Kargil and Hanle, has a mean altitude of 19,600ft., and that of the Northern

Himalaya between the junction of the Shayok with the Indus and the eastern frontier may be placed at about 20,000ft. The altitude of that part of the Karakoram which lies in the line of our investigation can hardly be determined. Giant peaks like K<sup>2</sup> lie to the north-east of our district, and cannot be considered in any calculation. On the other hand the Sasser Pass (17,300ft.), which crosses a great branch of the Karakoram, is surrounded by peaks of 20,000ft. to 25,000ft.; the Karakoram Pass itself is 18,000ft., whilst the known absence of other passes points to a continued high level of the range. We venture, therefore, to place the mean altitude of the Karakoram peaks at about 23,000ft.

For the same distance we find the mean height of the passes to be, in the Southern Himalaya 14,400ft., in the Central Himalaya 15,800ft., in its northern branch 16,700ft., in the Northern Himalaya 17,100ft., and in the Karakoram 17,500ft.



SECTION THROUGH THE WESTERN HIMALAYAS.

Following Cunningham, I have endeavoured to work out a transverse section through all these mountains and valleys on a line drawn north-north-east from Hoshiarpur in the Punjab. For the sake of completeness I have carried it on to Yarkand, and have also entered the altitude of the Victoria Lake on the Pamir Plateau. We observe at once the enormous work done by the Zangskar river and its tributaries in washing out the plateau to so great a depth below its original level. Another interesting point is the extraordinarily low altitude of the Zoji Pass. But the most interesting observation seems to me to be connected with the snow line. Its altitude, of course, varies considerably from year to year; but for the parts of the mountains we are considering, Cunningham gives the snow line both north and south of the Southern Himalaya as about 17,000ft. On the Central Himalaya I think the southern slope has its snow line at 17,000ft., and the northern slope at 18,000ft. Both

the northern branch of this range and the Northern Himalaya have their south snow line at about 19,000ft., and the north snow line at 18,500ft. For the Karakoram, having hardly more data to go upon than had Cunningham, I give his figures of 18,500ft. for the south and 18,000 for the north side.\*

We notice at once that the northern snow lines are all, as we should expect, lower than the southern, with the exception of the Central Himalaya, where the northern snow limit is distinctly higher than the southern, and we naturally enquire what the causes of this may be. It is no doubt due to the great rise in elevation of the mass of land. The valleys on the north side of the range are the highest in the whole mass of mountains. Besides this we must consider the influence of the



TYPICAL PLATEAU.

Rupshu plateau. It consists of broad flat valleys flanked by hills rising but little above the plains. The accompanying plate may be taken as a fair specimen, though it does not represent any part of Rupshu, but another of the plateaus which occur with monotonous frequency at lower levels throughout the country. In some parts water has collected, forming various lakes, some of which are salt, and some fresh, the Moriri lake being the largest. Its altitude is 15,000ft., being therefore greater than that of the Victoria lake and the levels of the Pamir Plateau. At this height the air is extremely rarified, and consequently offers no opposition to radiation. Cunningham states

\* All these figures are necessarily somewhat vague. On the north slope of the Northern Himalaya perpetual snow is found in sheltered places at a very much lower level; and it is worthy of note that the Karakoram Pass is always open, whilst the Sasser Pass is closed from December to June.



that "the noonday sun is sometimes 25° hotter than it is in any part of India." It is hardly wise to rely too much upon the figures of this statement, as it depends upon a few isolated observations, and black bulb radiation thermometers are so often unreliable. For definite figures we must wait until we have a sufficiently large range of observations with more than one instrument. But the heat is certainly very intense. Whether moving or resting, one seems to be living in an oven. The water courses are dry, for the melted snow does not fill them till evening. The only growth, if there be any at all, is furze about 1ft. high, so that no shade can be found, and you crawl along despondently and listlessly, with often a tantalising miraged image of a beautiful lake fringed with palms always about a mile before you. No sooner has the sun set, however, than the air cools so rapidly that you can almost see the mercury fall in the thermometer, whilst a violent wind arises which threatens to tear your tent away. Whilst even the lightest clothing seemed unbearable at noon, you now hasten to pile blankets on to your bed, for it freezes nearly every night of the year, and when early next morning you turn out, shivering, you wonder how it can be possible that within a few hours you will be again exposed to the terrible raging heat. The effect of a large expanse of country of this kind must be very great, and we have here sufficient reason for the high level of the snow line, even without considering the further fact that the high mountains effectually prevent moist clouds from passing from the south to the north.

After giving so much attention to the mountains, we can be much shorter with regard to the rivers, especially as we have only one to consider. The Indus is already a considerable stream when it enters Ladak. Near the Chinese frontier it flows between low sand banks in an open valley. Below the influx of the Hanle stream it becomes a rushing torrent confined within narrow walls; opposite Leh it has room to spread out and divides into various streams, but it is soon confined again, and rushes through ravines, the mountains becoming closer and closer, until in lower Ladak the Indus runs through a very narrow, almost inaccessible gorge. The Zangskar river flows, except near Padum, almost entirely in narrow gorges, and contains at its confluence with the Indus quite as much water as that river. The Shayok river, rising in the Karakoram, is joined in the midst of a fine, open, and fertile valley by the Nubra river, both of them conveying immense quantities of water from the heights of the Karakoram. Below this its bed contracts, until it joins the Indus above Skardo.

Cunningham estimated the discharge at Skardo to be 4,500 cubic feet per second, *i.e.*, about 28,000 gallons per second. We may reckon 12,500 gallons as being the contribution of the Shayok, and 3,500 gallons as being due to the Suru, Dras, and



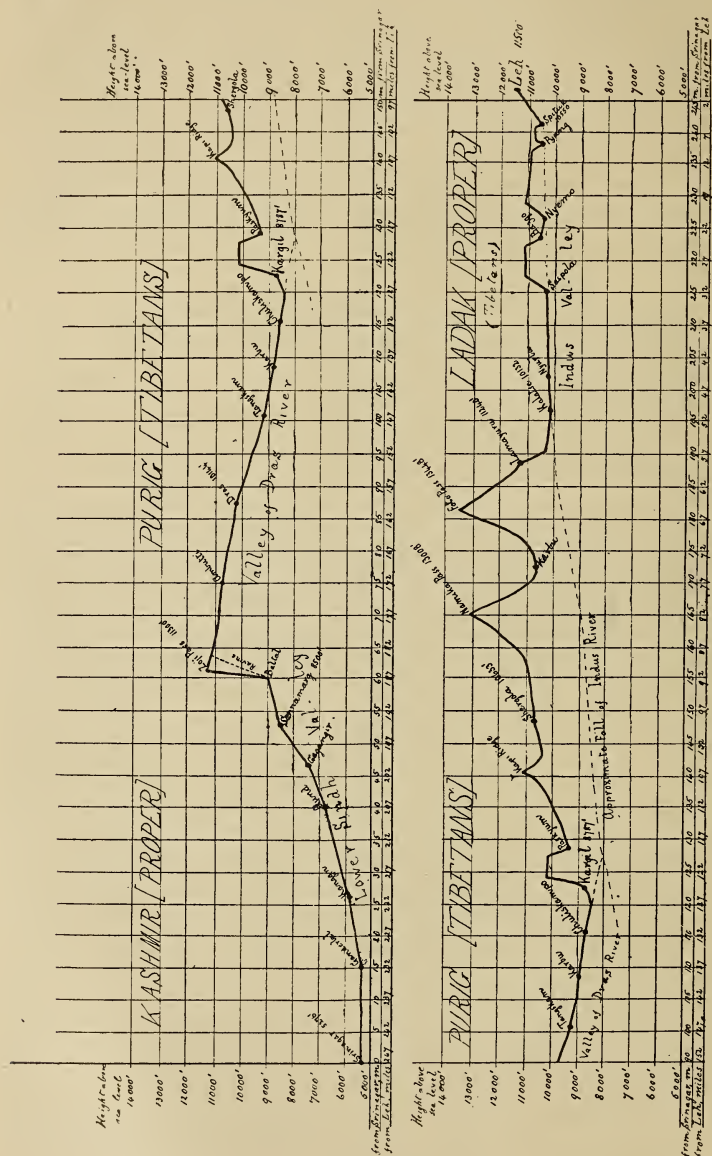
other minor streams. This leaves us 12,000 gallons for the combined Indus and Zangskar Rivers. Each may duly claim one-half of this as its share, so that the discharge of the Indus alone near Leh may be estimated at 6,000 gallons per second. These figures hold for winter, at which time the water is beautifully clear. In summer all the streams become more and more turgid as the waters rise. The greatest height is attained in July and August. From comparatively easy observations at Kalatse, where the river is enclosed between nearly perpendicular walls, it may be deduced that its maximum discharge in ordinary seasons is nine times its winter discharge; so that, assuming the same rise throughout, we have the following figures:—

Indus at Leh .....	54,000	gallons per second.
Zangskar .....	54,000	” ”
Minor rivers .....	31,500	” ”
Shayok river .....	112,500	” ”
<hr/>		
Total at Skardo ...	252,000	” ”

It will be evident from what we have said, that access to the country is easiest by the Kashmir route. Proceeding by this route, the Zoji Pass is the gate of Western Tibet. It is naturally accessible from the south by means of a narrow gorge with nearly perpendicular walls. In winter this ravine fills with snow, across which it is just possible to travel without heavy burdens. The mails are, with many irregularities, brought up this way. In summer the gorge is impassable, owing to the amount of water flowing down, and recourse must be had to a road which has been constructed across the face of the western precipice. The pass is interesting, being on the Central Himalaya, as marking the boundary between verdure and barrenness. The moisture-laden clouds from India condense rapidly on reaching the summits of the Central Himalaya, resulting in great humidity and verdure on the southern slopes, whilst the country on the northern slope is arid and consequently barren. Ladak has an average rainfall of only 2½ in. per annum.\* This is not enough to form glaciers of any extent. But the Zoji Pass being the only opening for many miles the clouds rush up to it, and consequently there is an enormous deposit of snow on and near the pass. For this reason a fairly large glacier—the Mitsahoy Glacier—is found near the summit of the pass, at an elevation which in all other parts would allow of the successful cultivation of cereals.

\* Ramsay gives the total rain and snow fall in Leh during the years 1885 to 1889 inclusive as 2·32 in., giving a yearly average of less than half an inch. I have, however, examined the records from 1876 to 1893 inclusive, and find the average to be 2·7 in. per annum.

Another point of interest about the Zoji Pass is illustrated by the diagram giving a rough profile of the chief heights on the



SECTION ALONG THE ROUTE FROM SRINAGAR TO LEH.

The vertical lines denote distances of five miles, the horizontal lines altitudes in thousands of feet.

road to Leh. On looking at the Zoji Pass, you see there is a precipitous ascent and a very slow descent, indeed it takes three days to descend the height scaled in as many hours. It

is this unusual nature of the pass which constitutes its danger. For a whole day you may be exposed to a wind that benumbs the whole body, your progress becomes slower and slower until at last you feel inclined to drop, when you would be quickly frozen to death, a fate which actually overtook many a native until shelter huts were built at various places, primarily for the benefit of the mail carriers, but useful for all. Nothing can be finer than a march over the pass on a fine summer day, over soft turf and meadows of edelweiss. Nothing can be more trying than a march over the same pass very early or very late in the season, with loose snow and a high wind.

Only a few miles north of the pass the scenery assumes the features which it bears throughout the country. There are weary miles of bare mountain slopes, with here and there a

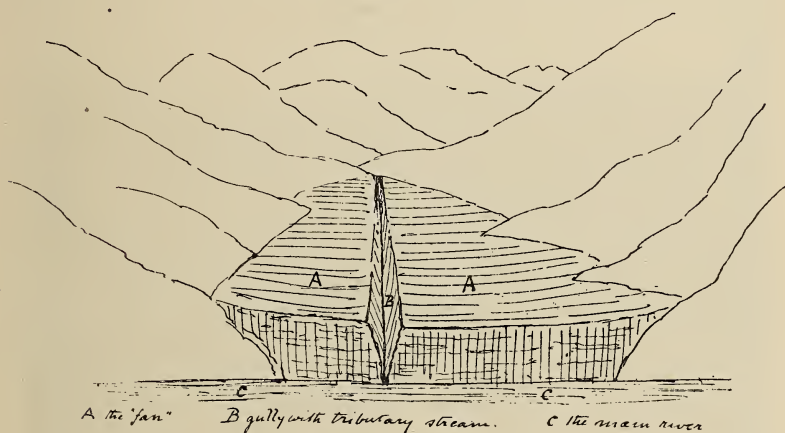


DIAGRAM OF A "FAN."

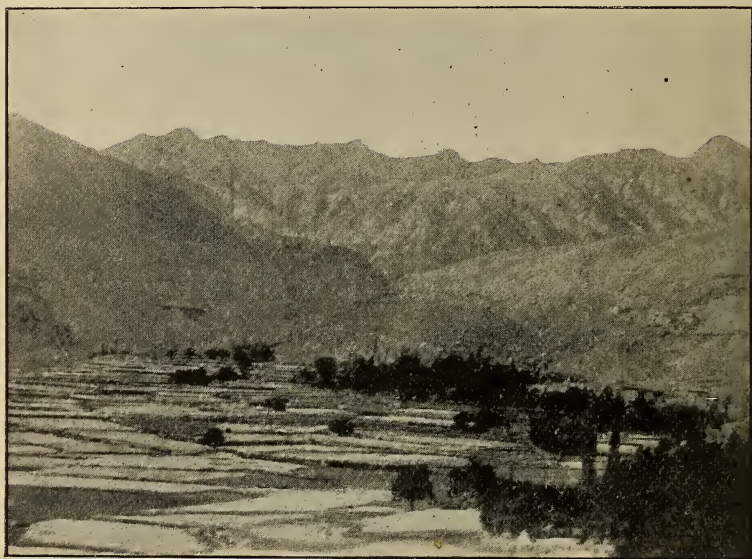
delightfully green oasis, marking the site of a village. The peculiar configuration of the country which causes this must now be considered.

It is evident that the mountain slopes are useless for agriculture. Firstly, there is no earth on them; secondly, there is no rain. In ages past, however, either torrents or mud avalanches, or both, have carried down huge masses of *débris* and deposited them at the junctions of the side valleys with the main stream. In course of time the streams have worn through this "fan," as it is called, and run in deep ravines below them, often 200, sometimes over 1,000ft. deep.

The diagram may serve to illustrate this. You have a comparatively level tract at the opening of the valley, with water running at the bottom of the ravine. In order to utilise these fans, the only possible sites for fields, the natives tap the stream



high up the valley and conduct the water in irrigation canals along the mountain slopes until it reaches the head of the fan, whence it is distributed over the whole surface. Though quite ignorant of any principles of hydrostatics, beyond the very elementary fact that water runs down hill, the people show considerable ingenuity and no small amount of patience in constructing the canals, which are sometimes two or more miles in length. Where canals cannot be constructed, or where the supply of water is inadequate, the fans lie waste. The thousands of gallons in their rivers are utterly useless to the Ladaki, because they know of no means of raising the precious liquid.



LADAKI VILLAGE (SASPOLA).

The usual aspect of a Tibetan village is well illustrated by the accompanying picture of part of Saspola, in the Indus Valley. The houses are built on a hillside round the fan, the level ground being far too valuable to be built upon. The fan itself is divided into a number of artificially constructed terraces, and looks from a distance not unlike a pile of monstrous soup-plates. The order in which the fields receive water is strictly regulated by custom, but in years when water is scanty many difficulties arise. The Ladaki are pre-eminently good-natured, and, except when in liquor, they are not likely to quarrel about anything but water. But it may be asked: "Where does the water come from if there is no rain?" In Ladak the streams are fed by the snow on the mountains. What the Ladaki farmer desires is a

cloudy winter, which means plenty of snow on the mountains—snow in the valley melts rapidly and is of very little use—and a clear sky in summer, which ensures enough melted snow to irrigate his fields, and enough frost at night to prevent the melting process from going on too rapidly.

This daily snow-melt is the reason of another interesting feature, viz., the fact that Ladaki streams have a very marked ebb and flow daily during summer. The ebb takes place when the supply of water is cut off by the nightly frost; the flow, when the water generated by the daily thaw has reached the valley. The time of day when this occurs varies of course with the distance of the place from the scene of melting, the angle of the decline, etc., and in case of being obliged to ford a stream, it is often of paramount importance to arrive at the right time, unless you are to be delayed many hours in waiting for the water to fall. For Ladak the rise generally takes place at about 6 p.m. and reaches its highest at 9 or 10 p.m., when the water begins to subside. The volume and suddenness of this daily rise is hardly credible. Within half an hour a trickling brook, which could easily be jumped, becomes a raging, roaring torrent, several feet deep, and rolling huge blocks down with it in its impetuous career.

Naturally, agriculture carried on under such conditions can only be of small extent. When only the fans can be cultivated, and not even all the fans, the arable land must be very limited. If we estimate, with Cunningham, the total area of Ladak to be 21,600 square miles, revenue returns accessible to him gave 66,000 acres, or approximately 103 square miles, as the total cultivated surface—*i.e.*, the cultivated land is only about the 1-200th part of the country.

The crops sown are chiefly a beardless barley, wheat, and some peas and turnips. During the summer much time is spent on irrigation, and by September the crops are ripe. They are threshed out by the feet of beasts, and winnowed by the help of the wind. A ten-fold return constitutes an average crop. No doubt much seed is eaten by wild birds; more is destroyed by late frosts. The height at which cultivation can be carried on is a point of some interest. In the Bhaga Valley cultivation ceases at Dartse, at an elevation of 10,800ft. In the Sindh Valley of Kashmir cultivation seems to cease at about 7,000ft., whilst Dangkar in Spiti is said to be 13,000ft. above sea level. All these places are on the south slope of the Central Himalaya. In Ladak, however, crops are raised up to 14,000ft., and even higher, though they have not seldom to be cut unripe, on account of early snow falls.

The plough is made of wood, tipped with iron, and has only one handle. The fields are ploughed in autumn and then left during the winter. In April dung is spread on

them, and they are in May ploughed over again and sown in such a way that in making a furrow the plough covers the grain sown in the previous furrow. As the soil is sandy, this treatment is quite sufficient.

The style of building is peculiar, and is another example of the effects of the dry climate, as well as of the absence of mechanical ingenuity on the part of the people. Whilst building timber is exceedingly scarce, being limited to poplars, the climate does not demand the use of materials which easily resist the effects of moisture. In most houses the ground floor contains stables; above them are the dwelling rooms for winter and the store rooms. The main room has usually a large window with a balcony. The flat roof is often enclosed on three sides with a verandah, the top of which serves as a hayloft. In houses of



LADAKI ARCHITECTURE.

any pretensions the private chapel is on the roof. Shutters are frequently absent from the windows, and only very few people are beginning to use glass. The stables are built of unhewn stones, joined with mud. More mud is formed into bricks, which, when dried by the sun, are used to build the higher storeys, being again joined with mud. The flat roof is made of mud, and finally a plaster of mud is put over the walls. The whole is then whitewashed and decorated to taste. Of course this style of building is not very strong, although the method of giving the walls an inward slope adds much to their stability. Any heavy rain, however, is sure to cause the collapse of a house or two. This is not a very great disaster. All the materials



are on the spot, and in a short time, with the assistance of his friends, the owner has made new bricks and mortar of the original mud, and rebuilds his house at a very slight expense.

As a rule the scenery is not pretty. Apart from the dreary, scorching plateaus, the total absence of verdure precludes any beauty, such as we look for in mountainous districts. The gorgeous scenery for which the slopes of the Southern Himalaya are famed makes the barrenness of Ladak all the more striking. Yet Ladak has a beauty quite its own, a beauty that must be sought in rugged grandeur and massiveness rather than in softness of outline. There are magnificent gorges which only the midday sun can penetrate; there are clusters of rocky pinnacles, inaccessible even to the ibex, so steep that the snow



INDUS VALLEY SCENERY.

cannot lodge, and seemingly sharp as needles; and in many places you have an unhindered view from the valley to the mountain top, nine or ten thousand feet higher up. An added feature in such views is the extremely vivid colouring. Picture to yourselves the fields as vividly green as you can, the houses white, the snow-topped hills all imaginable shades of red and brown and purple and even yellow, the river maybe flashing in between, and above all a cloudless sky, almost indigo in its depth. Add to this the extraordinarily pellucid nature of the atmosphere, by virtue of which the most distant objects stand out with almost startling distinctness. For a new comer it is a safe rule in estimating distances to judge them first as if in England, and then to double the estimate in order to arrive at the real distance.

As a rule the roads are good, *i.e.*, the main roads are a yard or more broad and perfectly firm. The great trade routes from Leh are under the care of the British Joint Commissioner, and are continually being improved. But in the side valleys the roads often dwindle to very narrow, sometimes rather dangerous tracks. By far the most awkward bits are precipices which drop down directly into a river. In such cases the road is carried along the face, propped on bits of timber thrust into any available crevice. In the Lower Indus valley there are miles of such scaffolding.

The tops of passes are naturally other places where a road cannot be kept in promenade order, and one must be prepared for rough bits. But it is wonderful what an improvement can



CANTILEVER BRIDGE (KARGIL).

be effected by a judicious use of the crowbar. A road good enough for the ordinary traffic over the minor passes is easily constructed; important passes are either low and the road is therefore more easily kept in order, or else it has to be extensively repaired every year.

Bridges are, however, nearly as important as passes, and being an artificial construction are to some extent a gauge of the abilities of the natives. They are built on the cantilever system. On both banks beams are fixed horizontally in tiers, each tier projecting some distance beyond the one below. This is continued until the span in the centre becomes small enough to allow of being crossed by long beams—in practice this means that the central opening may not be more than 40ft. The bridge



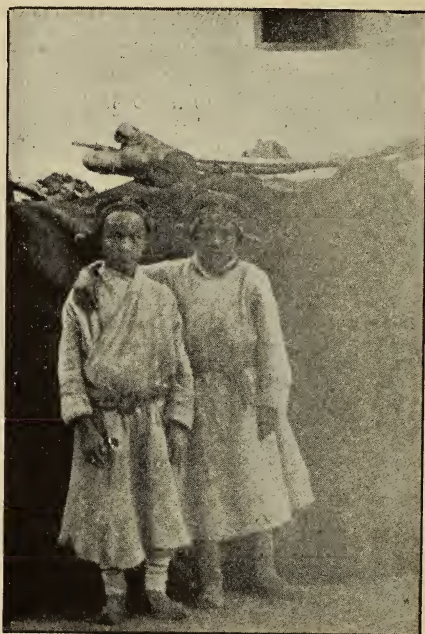
is then floored, either with boards or more usually stone slabs. One or two bridges have also a handrail on each side, but this is considered a luxury and is nearly invariably dispensed with. Of course this style of building requires a narrow gorge, as otherwise the span would be too great. Where no such gorge is available, piers have to be built in the bed of the stream, as in the bridge at Kargil. The drawback to this is that the piers are apt to be swept away in a flood, and communication is thus interrupted for lengthy periods.

Besides these more or less firmly built wooden bridges, there are the celebrated Tibetan suspension bridges. The more ordinary kind consists of a bulky cable, twisted of twigs and roots, which serves as a footway, whilst two similar cables, placed about a yard apart and a yard above the footway-cables, serve as handrails. Smaller ropes connect them with the footway, leaving however ample room to fall through. Naturally such heavy cables cannot be drawn taut; on the contrary, the whole bridge hangs down in a deep loop, involving the necessity of climbing down to the middle and then climbing up the other side. Also, the weight of the traveller upsets the equilibrium of the structure, and causes a very perceptible swing backwards and forwards. If, as often happens, the bridge is swung sideways by the wind, the result is a very nasty oblique motion. The great danger of these bridges is the possibility of an attack of giddiness. It is absolutely essential to look down, in order to see where to plant your feet; and as soon as you do so, you cannot help seeing the water rushing along, often many feet below you. The most awkward bit by far is the middle, where a pole is always fixed transversely in order to steady the two hand cables. This pole is too low to pass under, and yet high enough to render the task of lifting one's leg over it awkward enough, even if your other leg rested on firm ground. To execute the manœuvre satisfactorily on a swinging basis required some little practice.

The general appearance of the inhabitants of Western Tibet is illustrated by the picture of the two boys. The boy on the left is a very good specimen of the pure Tibetan type. In general they have short stout figures and ugly square faces. The nose is broad and flat; the cheek bones are highly developed, and the eyes consequently appear to be obliquely placed. The ears are prominent and have unusually large lobes; but I am inclined to believe that this is due to the long-continued use of enormously heavy earrings. The hair is always black; moustache and beard are very scanty. Buddhist Ladaki always shave the front half of the head; the hair of the hinder part is plaited into a pigtail about 1ft. long by nature, but continued by art to reach to the girdle, where it is secured. Mohammedans shave the entire head. Unfortunately, reliable measurements have

never been made; but there is no doubt that the type on the whole is Mongolian. The colour of the skin when not obscured by dirt is, however, darker and less yellow than that of the Chinese. Many inhabitants, however, have a very light colour, whilst some are almost black. A dark colour is not considered desirable, and I have been often asked for medicines to give a lighter tinge to the complexion.

Ladak is, however, inhabited by other races, not pure Tibetans. The other lad, *e.g.*, is a Dard, an almost purely Aryan race. They inhabit several villages in Ladak, and keep very much to themselves. They speak their own language, indeed



TYPES OF LADAKI.

many of their women do not even understand Tibetan. They profess a peculiar form of Mohammedanism. Then there is also an increasing number of so-called Argons, a mixed race springing from nikah marriages contracted by Yarkandi traders, who are again, I believe, Aryans, though speaking a Turki language. The traveller mostly comes into contact with these, for whilst the pure Ladaki remains at home to cultivate the hereditary farm, the Argon, having no such opportunity, is largely driven to gain a livelihood by trade, or letting pack-horses for hire to the merchants. In appearance they are much like the full-blooded Buddhist Ladaki, and, though Mohammedans, they

eschew the turban usually worn by their co-religionists. Their character has been the subject of some discussion. Whilst many travellers aver that, like most mixed breeds, they have all the evil and none of the good of both sides, I personally agree with those who consider that the Argon is a distinct improvement on the original stock, being just as willing but more resolute and reliable.

Whether this is very high praise depends upon our estimate of the character of the people in general. Some travellers express a very low opinion of the people, but I think their opinion must be accepted with caution, as it is only in very rare cases that they communicate directly with the people. In more than one case I have found that where the Tibetans justly complained of having been disgracefully underpaid by a European, the gentleman equally justly complained of having had to resist overcharges, the fact being that the traveller's go-between (usually a Kashmiri shikari) had swindled both sides impartially. On the other hand, I have not yet found anyone who has become acquainted with the language and thus come into actual touch with the Ladaki who has not found his dealings with them to have been very pleasant. The morality of the people is not very high, but they are distinctly above both Kashmiri and Yarkandi in this respect. Intellectually they are no match for the Kashmiri, but are infinitely more truthful. They are less self-reliant than the Yarkandi, but also much less insolent. The leading features of their character seem to be timidity, stupidity, and extreme good nature. Their timidity prevents them from asserting their just rights, whilst their stupidity prevents them from adopting measures to better their position. But their good-humoured temperament will always make them a pleasant people. They seldom quarrel amongst themselves, and murder is practically an unknown crime. They greatly love a joke, and are always ready for a chat with any European whom they know. They are cheerful under most depressing circumstances, and can rough it to an incredible degree; but they are apt to give in too easily when really over-taxed, at times when a European helps himself by an unusual exertion of his will. When well led, they make excellent servants and companions on long and difficult journeys. Though naturally a stay-at-home people, they soon acquire a taste for travel, and may be relied upon to do their very best for their master.

They have a genuine love for their children, which may indeed show itself in weakness. They have a very highly-developed and strict code of etiquette, to which they adhere rigidly. The position of the women is on the whole good. The close contact of Buddhist polyandry and Mohammedan polygamy seems to be leading to a large increase of monogamy. Only a



few wealthy Mohammedans can afford to keep their women "purdah," and the Buddhists even go so far as to sanction, under certain circumstances, women inheriting and owning property in their own right to the exclusion of male heirs. A Buddhist Ladaki once tersely explained to me the relative position of the sexes as follows: "In the farm I am master, at home my wife rules; this is as it should be."

The male dress is very simple. It consists of a long garment like a dressing-gown and pyjama trousers, made of native cloth. The calves are wrapped in bits of felt, and shoes of



FEMALE COSTUME (BUDDHIST).

various kinds are worn. The cap is usually made of imported cloth; in winter it is lined with sheepskin. The broad flap is an admirable covering for the ears, and is sometimes used in summer as a shade against the sun, the cap being then worn with the back part to the front.

But if the Ladaki male garb is plain, the attire of a female Buddhist is simply wonderful, and really passes description. The headdress is a most complicated thing. Operations are begun by sewing a large flap of brocade and sable above each ear. The hair is then woven into five plaits on either side, which hang down over the shoulders and are united at the

small of the back. From thence they pass, with black wool woven on if necessary, to the ankles, where a tassel of cowries and little bells is attached. On the top of the head is sewn a piece of stiff red cloth, studded with dark green turquoises and silver ornaments, and reaching some distance down the back. There are sundry minor details in the way of plaits, but enough has been said to show that for a Ladaki woman the "doing" of her hair is a fearsome task—so fearsome, indeed, that the ordinary lady wears the whole concern day and night, and "does" her hair only two or three times a year! On the wrists they wear cuff-like circlets, which are simply conch shells with the top ground off. Putting them on is a somewhat painful operation; but once on they are never removed until they happen to be broken, or become too small. On the whole they are rather a good idea, as they give an appearance of neatness which would be wanting if any material were used that requires washing, a process to which Ladaki are very averse. Ornaments are, of course, applied wherever possible, and the colours of the dress are of the gayest description. It would seem that the brightness of colour in nature around them has had a distinct effect on the people. For instance, the cloak is of a crimson colour, with a broad edging of vivid green. A troop of Ladaki women arrayed in their best makes a very effective picture.

The latest census returns give the total population at 28,274, which is an average of 274 per square mile of cultivated land. It must, however, be borne in mind that there are very extensive flocks and herds, which gain an existence by pasturing on the hillsides. The extent of this land cannot be computed. It is the rarest thing to see only a few yards of anything approaching a meadow. For the most part the herds feed on various herbaceous substances struggling for an existence on the bare hillsides, and which are not sufficient to give a green tinge to the whole, even when seen from a distance. Taking the total area of the whole country the population is about 1.31 per square mile, or four persons to every three square miles. After a residence in Ladak it is positively oppressive to have to live in England—one feels almost choked and crushed by the crowded population.

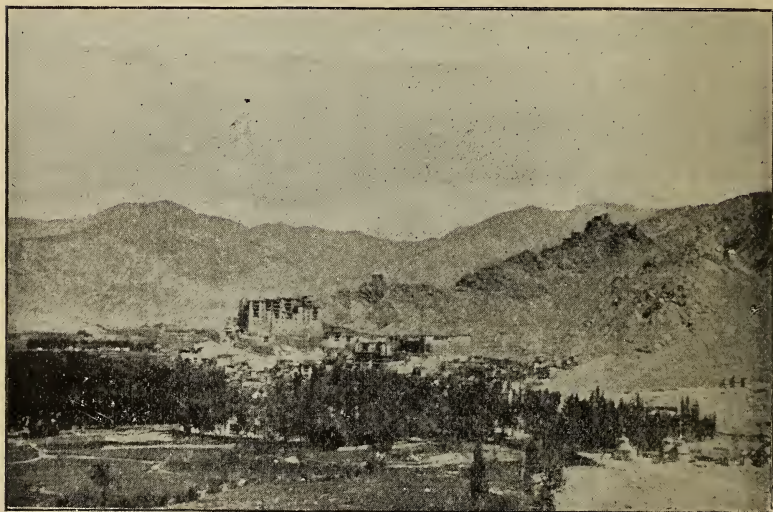
A country such as that we have described can naturally be of small commercial importance. It produces nothing for export, and those wants of its inhabitants which cannot be supplied locally are so few in number that the country can absorb but little. If, notwithstanding this, Ladak is important from a commercial point of view, it owes this importance to the fact that it lies on great trade routes between India and Central Asia.

Traders from north, south, east, and west meet in Leh to transact business; the inhabitants of the valleys of the Suru

and Dras Rivers are largely engaged in the carrying trade; and the demand for fodder secures to the villages nearer at hand a good price for what they can bring.

Leh, the chief, indeed the only town of Western Tibet, is built on and around a mountain spur, projecting into an unusually large open valley. At the head of this valley, visible from Leh, is the Kardong Pass (17,500ft.), a rather nasty pass, across which lies the trade route to Central Asia and thence to Siberia.

The most striking edifice in the town is undoubtedly the huge palace of the former native kings. Immediately below this are various monastic buildings, below which again are the closely packed native houses. Besides the palace, the great



L E H.

feature of Leh is its wide and spacious bazaar. It is quite a modern construction, and, though the houses are poor, it is by reason of its breadth and of the trees planted along the side, better than the majority of bazaars in the great Indian cities. In winter and spring trade is at a standstill, and the bazaar is deserted. But during summer and autumn it is a busy scene, where representatives of almost every Central Asiatic tribe can be descried.

From what has been said it is evident that the chief approach to Leh is through Kashmir, by a route which avoids any high passes. From Srinagar this route leads up the Sindh Valley, across the Zoji Pass and down the Dras Valley to Kargil. Instead of continuing down to the Indus Valley, which is here hemmed



in by slopes too precipitous to allow of a good road being built without great expense, the route keeps south of the Indus, crossing spurs of the northern branch of the Central Himalaya by the Namika Pass (13,000ft.) and the Foto Pass (13,300ft.), neither of them at any time presenting the slightest difficulty. The Indus is reached and crossed at Kalatse, from whence the road leads along the right bank of the river to Leh. The distance is 242 miles by chain measurement made in 1889, and is usually traversed in 17 days. For trade purposes it is closed from December till May.

Another route from India leads through Kulu, Lahaul, and Rupshu. As it leads transversely across the mountains instead of going round them, it crosses more and higher passes than the Srinagar route. It is closed from November till June, and there is at all times the difficulty of supplying fodder and food for the journey across Rupshu. For these reasons traffic along this road is small, but it becomes important when at any time it becomes desirable to avoid the other route, *e.g.* on account of cholera or glanders in Kashmir. By this route the distance from Leh to Simla is about 430 miles or 35 days.

The ordinary route from Leh to Yarkand crosses the Kardong Pass (17,500ft.), the Sasser Pass (17,300ft.), the Karakoram Pass (18,000ft.), and two other passes, and is about 500 miles long, or 35 marches. A large portion of the districts traversed is uninhabited, and many alternative routes are available for longer or shorter distances, so that the above figures are only approximate. The road is practically closed from November till June.

The road from Leh to Skardo in Baltistan passes down the Indus Valley past Kalatse to Hanu. Here the Indus Valley becomes impracticable, and the road crosses the Northern Himalaya by the Chorbat Pass (16,696ft.) into the Shayok Valley, down which it leads to Skardo, being about 200 miles, or 15 marches. The Chorbat Pass is closed from December till May.

Lastly, the route to Lhasa leads up the Indus Valley, crosses the Maryam Pass near Lake Manasarowar, and then follows down the Brahmaputra Valley. As far as could be ascertained, there is only one easy pass, but large uninhabited districts have to be crossed. Three months is reckoned for the journey.

The chief articles passing through Leh from Chinese Turkestan are charas (a preparation of hemp), shawl-wool, felts, and tobacco. From Chinese Tibet comes a large amount of shawl-wool, salt, tea, and borax. In return, manufactured goods of all kinds, both European and Indian, are transported to Yarkand and Chinese Tibet. The total import and export trade in 1847 was estimated by Cunningham at 9½ lakhs of rupees, or £95,000, taking the rupee at 2s., as it then was.

Its increase was hindered by vexatious Kashmiri imposts, which led the Indian Government to interfere, and under a commercial treaty with Kashmir a British Joint Commissioner was appointed for Ladak. Trade rapidly expanded, but the road to Yarkand was temptingly open to Kanjuti robbers. Since the decisive action of the Hunza campaign this danger has ceased, and trade has gone up by leaps and bounds, the total for 1895-6 being given as over 62 lakhs, say £400,000. These figures are no doubt very gratifying; but it must be said that Russian and German goods are increasingly visible in Leh bazaar, and a prominent merchant told me that he was considering whether he should not cease buying English calicoes, as, though their appearance was better, they did not wear as well as others. With regard to printed cottons, he complained that the Russians were taking away his customers, both by reason of cheapness and better appreciation of the somewhat peculiar tastes of the inhabitants of Chinese Turkestan.

During winter the bazaar is utilised as a racecourse. The people are very fond of horse-racing, which sport they have not yet learnt to combine with betting. It is also used as a polo ground, and polo games are keenly contested. The game of polo, it may be mentioned, is a Tibetan invention, perhaps the only one that has found favour with English people, who have become acquainted with it through the mediumship of the Moguls, who imported the game to India.

The meteorology of the country, though a very interesting subject, is too large to be entered upon here. The Indian Government has for years supported an observatory in Leh, the work of which I had for some time the pleasure of supervising. The leading features may be briefly stated to be: (1) the scanty rain and snow fall; (2) the effects of excessive radiation, as shown in the great range of temperature, both diurnal and annual; (3) the prevalent winds. With respect to the rainfall, the observations made at Leh may be safely taken as true of the whole country, though I am almost inclined to believe that Nubra enjoys a greater rainfall, whilst Dras certainly does so. The effects of radiation vary very much with the altitude, and careful observations at other places besides Leh are highly desirable. Still more is this the case with the winds. Each valley may be said to have its own peculiarities, and the observations at Leh will very probably not be found to tally with those at other places. The Indian Government has always appreciated the value of meteorology, and it would seem that, apart from all scientific value, the meteorological conditions of the Himalayas have a very practical bearing on the all-important phenomenon of the south-west monsoon. If, therefore, not much has been able to be done, one cause must be sought in the insufficient financial resources at the disposal of the Department.



As a second reason may be mentioned the circumstance that the observations cannot be entrusted to the unsupervised efforts of natives. A doubtful record is worse than no record at all. The only hope seems to be that as the Moravian Missions increase the number of their stations, the Government may be able to establish observatories at such stations. The missionaries are keenly interested in any enquiry concerning the country, and would doubtless be ready to undertake the duties of supervision, as they are already doing in all of their three Himalayan stations, of which Leh is one.

---

NOTE.—In addition to his own observations, the author has consulted the following works: Cunningham's "Ladak, Physical, Statistical, and Historical," London, 1854; Markham's "Bogle and Manning in Tibet" (Introduction), London, 1879; Ramsay's "Western Tibet," Lahore, 1890. It will be well to refer to Drew's "Jamu and Kashmir Territories," and to Sir R. Temple's "Kashmir," &c.

---

## NEW BOOK.

---

CHAUNCY MAPLES, D.D., F.R.G.S., PIONEER MISSIONARY IN EAST CENTRAL AFRICA FOR NINETEEN YEARS, AND BISHOP OF LIKOMA, LAKE NYASA, A.D. 1895. A Sketch of his Life, with selections from his Letters. By his SISTER. With Portraits and a Map. 398 pages. Index and Illustrations. London: Longmans, Green and Co., 1897.

THIS is a brief sketch of the life of this disinterested and able man, written by his sister.

In four chapters is told this story, and we who had the pleasure of knowing him feel how true is the portrait here given.

If ever a "great heart" went to Africa to do good to the sable sons and daughters of the "Dark Continent" he was one.

Tireless in his collection of facts relating to Geology, Botany, Folk-lore of the People, and of the greater Geography, he placed his vast knowledge freely at the service of the world, with the intent that it should be for the benefit of the people of the land he loved so well and where he died.

The great country, which is now a part of our empire, was largely made known to us by him, following on the work of the Scotch Missionaries at Blantyre and Bandawe.

But his work also extended into that which is now German territory and amongst the people of the Portuguese.

His work was very successful, and future ages in Civilised Africa will keep his memory green as one of their great leaders into light.

As a Society we are proud that he was one of our members, and that we have often been charmed with his eloquence.

Our members will be glad to read this story of a glorious life.

## UNIFICATION OF TIME AT SEA.

By CAPTAIN W. NELSON GREENWOOD, F.R.Met.Soc., &c., Harbour Master of  
Glassen Dock, Lancaster.

[Addressed to the Society, in the Library, Monday, January 31st, 1898, at 7-30 p.m.]

ON the question of Unification of Time at Sea there is not much to be said that has not already been said or written by men more capable of handling the subject from a scientific point of view than I am; men whose words are of value and whose ideas, as they are given to us, are worthy of our every consideration. Reiteration is almost always wearisome and in time becomes noxious, yet it is the oft-repeated that forces itself upon us and our imagination, and eventually leads to reforms in minor details of our daily life that would otherwise never receive our attention; for we are only too apt to argue that what has done for so long will do for always when we are not personally concerned, or the subject is not kept prominently before us.

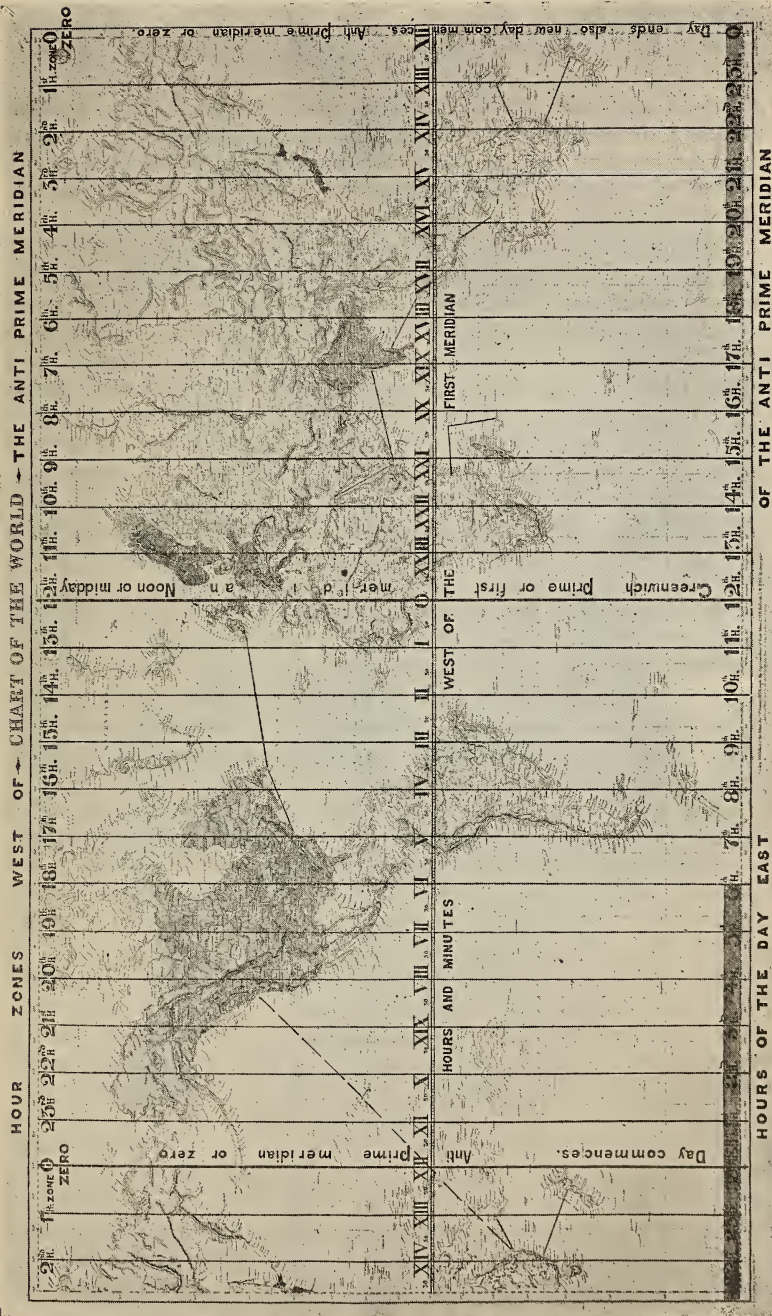
Why do we require unification of time at sea having done so long without it? Simply that an ambiguous term in a necessary daily calculation may be dispensed with and a dangerous source of error removed, by making uniform in time nomenclature the time in daily use at sea and the astronomical ephemeris which is indispensable to every navigator—a work without which it is impossible, unless under great disadvantages, for him to pursue his occupation.

Time, absolutely correct time, is an all-important element in the daily life of the navigator; and to obtain the correct time at ship is very frequently a cause of much anxiety and watchfulness to the navigating seaman. It—the time—is usually obtained once or twice every day, opportunity offering, and when approaching the land not infrequently in the night also, should the sky prove clear after a cloudy day. Having obtained the correct time at ship, the position of the ship east or west of the prime or first meridian is easily calculated with the assistance of a chronometer showing first meridian time, and a comparison—or the time of which was noted—at the moment the ship's time was ascertained.

The time is obtained by the shipmaster from observation of some celestial body—generally the sun—sometimes a star. The time obtained from the observation of the sun is what is called “apparent” time, and it is usual to turn this into “mean” time by the addition or subtraction of a correction for that purpose, called the “equation” of time, taken from the

# UNIFICATION OF TIME.

Showing Hour Zones and Countries in which they have been adopted. Longitude in Time West of Greenwich, &c. (For explanation, see page 20.)



Read 22 23 Night 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 0



astronomical ephemeris or nautical almanac. The difference between the ship's mean time and the mean first meridian time of the chronometer is the longitude in time of the ship east or west of the first meridian—as the ship's mean time is fast or slow of the time shown by the chronometer. This difference of time, or longitude in time, is generally converted into degrees and minutes of arc, as when we say Quebec is 4h. 44m. 52.56s. W. of Greenwich, or in longitude  $71^{\circ} 13' 13.14''$  W., which is its equivalent.

In parenthesis it may be as well here to point out, that the changing of the time thus found into degrees and minutes of arc is quite an unnecessary operation, for it is just as easy to locate New York as 4h. 55m. 53.64'' W. of Greenwich, or the first meridian, as it is to say that New York is in longitude  $73^{\circ} 58' 13.41''$  W. Such measurements can only with ease be made by the passage over the meridian of a celestial body at the two places, and the time that has elapsed since the first observation until the second passage is recorded. This elapsed time turned into degrees and minutes is the distance in arc of the second place of observation from the first. So far as the navigator is concerned this change is only made for the purpose of plotting his position on the chart, and if charts were delineated, as some have been, with hours and minutes west of the meridian in place of degrees and minutes, it would be quite unnecessary. Indeed, had correct timekeepers and the electric telegraph existed long ago, longitude would never have been heard of. Children would have been taught in school the time measurement only, and would have had a better idea than at present of locality east or west of the first meridian.

From this it would appear that time east or west of the prime or first meridian, and not so much the longitude, is the all-important feature in the daily life of the navigator when pursuing his calling out at sea, and seems to be a problem easy enough to solve when we search no more into it than we have done so far. It so happens, however, that the "apparent" time at ship cannot be obtained without calculation and the working out of a problem, the elements of which for the mean noon of the day and date in question—at Greenwich, or the first meridian—are contained in the "Nautical Almanac," and are there recorded for a day and date quite distinct to themselves, and differing by 12h., or as much as 24h., from the day and date the seaman is otherwise using, which latter may be civil time, or possibly, if his log is kept in that time, that of the nautical day. The difference in these three days—civil, nautical, and astronomical—has been frequently explained of late, and some attempt has been made to minimise the discrepancy of 24h. that exists between the two days, nautical and astronomical, by asserting that the same noon, ending one and

beginning the other day, does duty for both. The fact still, however, remains that it is very easy to take out a wrong quantity from a book of tables at the moment of changing the date when such a discrepancy exists. As this discrepancy in dates is not generally understood, it may not be amiss to give the explanation over again here.

Taking this day and hour for an example, and using the 24h. notation for illustration, we have for civil time Monday, the 31st January, 19h. 30m., or Monday, the 31st, 7h. 30m. p.m.; whilst for nautical time it is Tuesday, the 1st February, 7h. 30m., or Tuesday, the 1st February, 7h. 30m. p.m., for in nautical time the p.m. commence the day; and for astronomical time it is Monday, the 31st January, 7h. 30m.; a.m. and p.m. are not used in astronomical time, as the day is always counted as of 24 hours and written under that notation, and the same is frequently done in the nautical day, when the journal is kept in that time. From this it is evident that the three days overlap each other in a peculiar manner and taken together comprise 48h., in which of any given day and date the nautical day will include the first 24h. of the series, the civil day the middle 24h., whilst the astronomical day embraces the last 24h. of the 48h. The reconciliation of these three days one with the other, and to make them all three—in the 24h. notation—synchronize, is the object and meaning of unification of time at sea. Accomplish this and all the present confusion will be at once removed. It can be done by the general adoption of the civil day and date as the one universally recognised method of recording time.

The movement is not new, it is only a little more widely spread. Years ago it received the attention of various astronomers and other scientific men, but not being a subject of very general interest, it required more than a passing suggestion, however practical, to bring it publicly forward, and even now it is only where inconvenience is felt from the ambiguity of the “*times*” that it creates more than a passing interest. La Place, to whom we owe, in the abstract, our present method of predicting the tides, used for that purpose the civil day, and advocated the reconciliation of the civil and astronomical days.

On the question of unification, Sir John Herschell wrote long ago the following trenchant passage, giving still greater expression to it by writing the concluding sentence in italics: “This usage has its advantages and disadvantages, but the latter seem to preponderate; and it would be well if, in consequence, it could be broken through, and the civil reckoning substituted. *Uniformity in nomenclature and modes of reckoning in all matters relating to time, place, weight, measure, etc., is of such vast and paramount importance in every relation of life as to outweigh every consideration of technical convenience and custom.*”—“*Outlines of Astronomy.*”



From the day Sir John wrote the foregoing in respect to the advisedness of retaining the usage of recording astronomical occurrences in a day commencing at noon in place of at midnight, little was heard of his suggestion until 1876. In that year a movement to reform the time reckoning of all nations took its origin in Canada, at the instigation of the Canadian Institute, and was fully discussed at various meetings of that society during the next three years. In May and July, 1879, and again in May, 1880, the Governor General of Canada, the Most Hon. the Marquis of Lorne, brought the views of the society under the notice of the Imperial Government, and through the Imperial Government the attention of the foreign powers and scientific societies in all Europe was awakened to it.

The International Geographical Society, meeting in Venice in September, 1881, suggested that an International Congress should be specially convened to discuss the subject, and that such conference should be held in Washington, U.S. Following out this idea, the United States Congress passed a resolution that resulted in the President of the United States inviting the representatives of twenty-five of the principal nations of Europe and America meeting in Washington during October and November, 1884, to discuss the subject of time reform. Sitting over a month, they passed several important and far-reaching resolutions; but the sixth resolution of that Congress is the most remarkable—not alone for the unanimity which carried it, for it was carried unanimously, but from the fact that it remains as yet the only resolution that has not been adopted wholly or partially. This sixth resolution was as follows:—

“VI.—That the conference expresses the hope that, as soon as may be practicable, the astronomical and nautical days will be arranged everywhere to begin at mean midnight.”

Speaking on this question, Commodore Franklin, one of the Congress, and the then head of the United States Naval Observatory, says—and mark he is himself an astronomer, the head of a national and naval observatory and a navigator of no mean repute—“That he believed to all navigators, certainly to English-speaking ones, the new method which had received the attention of the Washington Conference would prove to be decidedly advantageous, as it would remove on the part of mariners the liability to confusion in the conversion of time due to the nautical day preceding the astronomical day by 24h. and the civil day by 12h.; that the navigator is concerned, not with the longitude but with the Greenwich time, having obtained which, he can look from the almanac the date he seeks whether given for noon or midnight, and when the Ephemeris shall have been made to conform to the new system there will be one time in common use all over the world.”

This Washington Conference was summoned practically to give an opinion on time reform, and whilst unanimous in its decision that the civil day reckoning was the proper one to adopt for all three times at present in use and so abolish any doubts or ambiguity in time nomenclature, it was not so successful in deciding from, or by, what prime meridian the new time notation should be governed.

The resolution recommending Greenwich as the universal prime meridian was eventually adopted, twenty-one nations voting for the Greenwich meridian against one dissentient—San Domingo. France and Brazil abstained from voting.

The practical outcome so far of the recommendations of the Conference has been the establishment of time zones, and this hour zone system has been adopted for ordinary use in portions of three continents—Asia, Europe, and America. The chart of the world on Mercator's Projection, which accompanies this paper, speaks for itself. It shows the hour zones as at present in use numbered from the anti-prime meridian, westward; and the corresponding hours of time from the commencement of the day, on the same meridian, eastward. Also the longitude, or distance in time measured westward, from the Greenwich or prime meridian. The countries shaded in the northern hemisphere are those that have wholly or partially adopted the zone system, and the 24 hour notation.

The telegraph systems of the world are too numerous to be shown distinctly on such a chart, but their broad principle is marked by continuous lines, whilst the broken line across the Pacific Ocean shows a contemplated connection. Once complete the circuit, and the incongruity of our timekeeping will be patent to all. In North America the zone system has been in force for fifteen years. It was adopted by Japan in January, 1887; it is in use in British India, Italy, Austria-Hungary, Germany, Norway, Denmark, and in Belgium—whilst in most of the aforementioned countries the twenty-four hours' notation is also in use. We have a modification of the zone system in use in this country so far as Great Britain is concerned, though why Ireland, only a matter of four hours' journey to the westward, should have a time of its own it is very hard to say, unless it be one of those most strange incongruities which seem to affect us throughout all our reforms, piecemeal legislation—a fear of going far enough. With these few and slight alterations from the old methods—some of which are of very recent date—the question of time reform remained almost a dead letter until, in 1893, the Astronomical and Physical Society of Toronto, in co-operation with the Canadian Institute, took the matter up. Conjointly they appointed a committee to ascertain the views of astronomers and others in respect to carrying out the recommendation of the Washington Conference of 1884, in respect to Resolution VI. On the 30th

April, 1893, the joint committee addressed a circular letter to all leading astronomers and scientific men of every nation throughout the world, asking—“Is it desirable, all interests considered, that on and after the first day of January, 1901, the astronomical day should everywhere begin at mean midnight?” In fixing the proposed date of the contemplated change so far ahead as the 1st January, 1901, the convenience of astronomers was considered, as it was thought it would leave them a date that could not be mistaken, that is, the first day of a new century, as the record for their change in time notation.

To the question asked in the circular 171 answers were received, the last one in December, 1894, from Signor Denza of the Vatican Observatory. Of the replies 108 were in favour of the change and 63 against. The countries represented by the favourable replies were: Austria, Australia, Belgium, Canada, Colombia, England, France, Greece, Italy, Ireland, Jamaica, Madagascar, Mexico, Roumania, Russia, Scotland, Spain, and the United States of America, 18 in all; whilst the unfavourable replies were from Germany, Holland, Norway, and Portugal, four in all.

The report of this joint committee of the Astronomical and Physical Society and the Canadian Institute was made in August, 1894, and on the 22nd September following our Foreign Office issued to Her Majesty's representatives in the countries publishing astronomical ephemerides, viz., France, Germany, Austria, Spain, Portugal, Brazil, Mexico, and the United States of America, a circular, stating that whilst the Lords of the Admiralty “do not consider the change necessary, they are nevertheless prepared to carry it out in 1901, provided that other nations who publish astronomical ephemerides desire the change and will take the same action.”

This was only a half-hearted way of going about it or giving expression to a wish to adopt the sixth resolution of the Washington Conference of 1884, a resolution that had received the united support of all our representatives, including such men as Admiral Sir Frederick Evans, then Hydrographer in Chief to the Admiralty; that illustrious astronomer, Professor Adams, of Cambridge; General Strachey, of the Council of India; and the delegates from Canada, and can only be equalled by the report of the three representatives of the United States Naval Observatory, who reported against the whole traditions of their country in respect to the movement, and then went and published their official tide tables in the 24 hour notation. For the fact cannot be disguised that an order was actually given on December 4th, 1884, by the then head of the Naval Observatory, to begin the astronomical day of January 1st, 1885, at midnight, in accordance with the recommendation of the Washington Conference of that year, and a letter of the Secretary of



the United States Navy to Congress actually shows that the order was only deferred until a general agreement could be arrived at in respect to the contemplated change.

To the circular issued from the Foreign Office official replies were received from Austria-Hungary, Spain, Brazil, and Mexico. France and our own Admiralty also assenting. Germany and Portugal sent no reply.

In the beginning of 1895 it became a question with the Astronomical and Physical Society of Toronto, taking all things into consideration, whether it would not have been wise to have ascertained the opinion of navigators rather than the opinion of astronomers as to the necessity of bringing about the reform to which it had addressed itself, for certainly the navigator is the principal user of the ephemeris compiled for him by the astronomer, and should have a voice in its compilation so far as to what form suits his necessities best. And whilst his use of it is attended by many distracting and anxious surroundings, the obligations of his calling, the astronomer has the advantage of quiet, if not positive ease, in conducting his researches. To this end, then, in the latter part of 1895 and beginning of 1896, a circular was addressed to captains—retired and in active employment—of the mercantile marine of this country and the foreign merchant service. The questions put to them in the circular were four in number, but the third inquiry possibly contains the pith of information sought. It is this—

“Are you in favour of the unification of time as applied to the civil, nautical, and astronomical days, and is it desirable in the interest of all concerned that such days should commence at mean midnight?”\*

The inquiry, so far as the shipmasters were concerned, was closed on the 3rd November, 1896. Up to this date some 500 replies had been received, 414 of which were from masters that were in active employment and representing 522,887 gross shipping tons. 323 of these representative shipmasters were responsible for the large amount of 464,529 tons of British shipping, and 315 of them answered the third question in the affirmative, or  $97\frac{3}{4}$  per cent, whilst 91 foreign masters, representing 58,358 shipping tons, were unanimously of the opinion that the change should be made. The replies of retired shipmasters, British and foreign, some 60 in all, were affirmative in similar proportions, the foreign masters being again unanimous.

Armed with this information, or such proportion of it as was at the time available—such proportion being almost exactly

\* Fearing that out of 28,000 possible shipmasters 500 and odd replies would not be deemed conclusive evidence, a further appeal has been made to them for their opinion. Up to date only 150 additional replies British and foreign have been received, all unanimous, which may be taken as evidence that the shipmaster is alive to the inquiry, and intends, time being given him, to record his vote again in its favour.



half, or 196 replies with three nays—the Astronomical and Physical Society and the Canadian Institute, through His Excellency the Governor General of Canada, again approached the Imperial Government with a view to the adoption of the proposed unification of time on the first day of the new century, namely January 1st, 1901, and later memorialised the Chambers of Commerce of the United Kingdom with a view to obtaining their assistance and active support in the movement. What action the Chambers of Commerce as a body took in the movement, at the request of the joint committee of the Astronomical and Physical Society and the Canadian Institute, it is impossible to state definitely, but it is certain that some of them took the matter in hand with a will, and, in spite of the stereotype reply sent to each one of them who forwarded resolutions in its support, still keep the movement before them. As a proof of this, one instance may suffice—that of the Sheffield Chamber of Commerce. This chamber, having the Departmental reply before them, resolve—“Your council regret this decision, because they feel that anything tending in the direction of simplifying matters which affect all nations alike is well worthy of the best efforts of Her Majesty’s Government, and that those efforts should be put forth, notwithstanding the fact of such difficulties as those referred to by the Admiralty.” Now, what are the difficulties referred to by the Admiralty? They are contained in their reply to the joint committee under date December, 1896—“That insomuch as unanimity in the effort to make the desired change on the part of the other nations that published ephemerides had not been obtained, their lordships had no intention of moving in the matter.” And in their later reply to the Chambers of Commerce, that to the Liverpool Chamber, dated February 25th, 1897, read as follows:—

“With reference to your letter of the 25th ult., urging that steps be taken by Her Majesty’s Government to secure an international unification of the nautical, astronomical, and civil days, I am directed by the Marquis of Salisbury to inform you that the Lords Commissioners of the Admiralty, to whom the matter has been referred, state that they have consented to consider this question, provided that the nations who publish astronomical ephemerides should be unanimous in their desire to make the change. This condition, however, not having been attained, Her Majesty’s Government do not propose to move in the matter.”

Lloyd’s Chamber of Shipping and the Royal Colonial Institute were also amongst those who memorialised the Imperial Government in support of the movement, and the reply received, if not a formal acknowledgment, was very similar to that given to the Chambers of Commerce.

Such is a rapid review of the progress of the movement from its conception to the present. The reform of time at sea is by no means dead yet. The movement is alive and active on both sides of the Atlantic. It received favourable consideration at the meeting of the British Association, held in Toronto, Canada, during August, 1897, and it is believed that steps have been taken to get the Foreign Office to again approach Germany, Portugal, and the United States on the subject, asking them, in the common interest of navigation, commerce, and science to join the other powers in giving effect to the proposal. Now let us discuss the *pros* and *cons* for and against this movement for the unification of time at sea. It has been before shown that the astronomers, numbering 171 of 25 different nationalities, who responded to the invitation of the joint committee of the Canadian Institute and the Astronomical and Physical Society, replied in the proportion of 108 yeas to 63 nays. Analysing the negative quantity we find that 31 out of the 63 nays came from German astronomers, or nearly one-half of the whole number of negative replies; Portugal 1, and the United States 10, out of a possible 38 replies received from that country. It has been estimated that the 108 affirmative replies represented 85 per cent of the world's marine—surely a majority sufficiently large to have carried the movement had it been put to the vote under any ordinary circumstances of every-day life. Examining the replies of the nine nations publishing ephemerides in the like manner, and taking the latest statistics available, we find—

For the Movement.			Against or None Replying.		
	Ships.	Tons.		Ships.	Tons.
English .....	11,237	13,482,876	.....	Germany.....	1,623 2,029,912
French .....	1,151	1,172,382	.....	Portugal.....	176 100,492
Brazilian .....	309	155,513	.....	United States	3,160 2,326,838
Austria-Hungary...	300	328,763			
Spain .....	723	587,787			
Total .....	13,720	15,727,321	Total .....	4,959	4,457,242

These figures are taken from Lloyd's Register, 1897-98, and include only such vessels as are over 100 tons register. The proportion in favour of the change is for six nations favouring it 64 per cent taking the number of ships, and 71·6 per cent for the shipping tonnage. Again a proportion in its favour sufficiently large to carry such a movement were it submitted to the majority vote of two-thirds in any other matter of public welfare. Great stress has frequently been placed upon the overwhelming negative vote of the German astronomers, and yet we have such names as Dr. Max Wolf and Professor Dr. C. Borgen given as appearing in the minority of German votes recorded. Further, it must be considered that the 31 German negative votes after all represent of the world's mercantile marine only  $5\frac{3}{4}$  per cent of the ships and barely 8 per cent of

the shipping tonnage. Again, are such majorities always a safe index of public opinion? More German astronomers voted in favour of the movement than in any other nation out of the 25 appealed to—England, Italy, and the United States excepted. Take from the minority vote the 31 German astronomers, and the percentage in favour of the change would be widely different. Courtesy always demands that nations as well as individuals should be consulted in matters of national importance or personal interest where many are concerned, and the question discussed is considered an innovation; but it is rare that an undivided vote is required before the subject under consideration is declared carried, and frequently the minority very readily fall in with the change. After all it may be asked, Is there any just reason why the question of the change in time should be decided by the vote of the astronomers of any one or more nations being in a majority against it, whilst those of the other countries concerned are equally great in its favour; or that the unanimous opinion of the nations publishing astronomical ephemerides should be required at all? so long as those favouring the change were not by sheer force of numbers out-voting others with the greatest interest at stake. Great Britain and her colonies possesses 40 per cent of the ships and 52 per cent of the tonnage forming the world's mercantile marine, and no other nation save the United States and Norway possesses one-fourth the shipping interest of Great Britain alone.

What are the arguments urged by the objectors against the adoption of the proposition for the unification of the "times"? There are only two that are worthy of a moment's consideration. First, the convenience of the astronomer and computer; second, the confusion that for a time might prevail at sea. Our own Astronomer Royal has answered the first part of the objection by adopting the change years ago at the Royal Observatory, Greenwich. Here is a copy of a letter written from the Observatory on Christmas Eve, 1884:—

"The change that will be made here on January the 1st is not the adoption of the 24 hours instead of the 12, for we have counted hours from 0 to 24 every day for many years past, as is customary with all astronomers, and a public clock outside the Observatory is so divided; but on January the 1st we shall change the beginning of the day from noon (at which time astronomical clocks have been accustomed to show 0h. 0m. 0s.) to midnight, thus bringing it into accordance with the civil day."

The above cannot be considered a private communication, for it appeared in the public press in January, 1885. The second part of the objection has been answered by the shipmasters themselves in the opinion they have given when asked, 97 $\frac{3}{4}$  per cent giving a favourable reply. To the astronomer it



can bring no possible inconvenience, this change of time; to the mariner it will be a positive convenience. To the former it means changing his date at midnight in place of at noon, no extra labour; to the latter it implies doing away with a constant changing of the date in every calculation he makes to ascertain his position, daily or semi-daily as the case may be. If the astronomer omit a date, or neglect to change it at the proper time, he has leisure at his command in which to rectify his mistake; if the seaman neglects to make his correction when working up his reckoning, serious loss of life and property may ensue. It would change the records of the astronomers, no doubt, by disturbing their continuity, but it would not be a change so great as that from the Julian to the Gregorian system, and if made at the beginning of the century, now so near, it would give them a landmark, so to speak, from which to mark a new time epoch. It would not inconvenience the mariner, for his vote in favour of the change says so, and even if it did, the inconvenience would be slight, for whenever the change is made he will have at least three years in which to make himself acquainted with it.

The 1st of January, 1901, seems a most desirable date on which to make the change, but in view of the contemplated action of the United States Naval Observatory, as expressed by the Secretary to the Navy in 1884, and our own Astronomer Royal in January, 1885—not to mention what took place between the 2nd and the 14th of September, 1752, when 11 days were bodily dropped out of the calendar, and if worse could be, not until it had been done in other countries for many years—the time epoch of the 1st January, 1901, can scarcely count as a necessary date on which to make the contemplated change. It can be equally well done on January 1st, 1902, or any subsequent date that may be decided upon. What seems desirable is that a mutual spirit of conciliation and understanding on the subject should be reached at the very earliest opportunity. In the meanwhile, into every calculation made by astronomer and seaman alike, the incongruity of time nomenclature enters in spite of all that has been written and said in favour of and against the change suggested.

It is not necessary to quote further the writings of those who favour it, but what has been said so far cannot be more aptly ended than by quoting the words of one distinguished astronomer, Dr. Johnston, of the McGill University, when he says—"That the omission of even a single step in an oft-repeated process of calculation has an obvious advantage: when the simplification removes at the same time that most dangerous source of error, an ambiguous expression, it becomes a great gain." "The subject resolves itself into a question of practical utility, viz.: what is the greatest good of the greatest number?"



OCEAN RAINFALL BY RAIN-GAUGE OBSERVATIONS  
AT SEA.—1864-75-81.

GENERAL AND SPECIAL OCEANS.

By MR. W. G. BLACK, F.R.M.S.

[Addressed to the Society, Wednesday, October 20th, 1897, at 7-30 p.m.]

## INTRODUCTORY.

IN introducing the subject of Ocean Rainfall to the notice of the Society I may mention that I began to take interest in it in consequence of Symons having already started observation of rainfall by gauge on land in England about 1860.

The recording of rainfall by gauge at sea on board ship had, however, begun before this, as I found by the registers kept at the Royal Meteorological Office, with the inspection and copying out of which I was favoured by the Secretary.

Amongst those who were found to have contributed records at sea were Captain Symington, of the Northfleet; Captain Martin, of the Java; St. John, of H.M.S. Sylvia; Hoskins, of H.M.S. Pearl, during the period of the 60's and 70's; and since then there have been several others who have taken up the subject in a scientific sense, and kept continuous records, as Captain Milner, of s.s. Para.

My marine rain gauges were constructed about 1870—72, and have been used at sea with success on several ships, to the captains of which they had been consigned for trial.

Many *contretemps* were met with in getting rain gauges installed on board ships, such as the loss by storm overboard of the instruments, their damage in cargo vessels by colliding with goods, the illness or absence of the only officer detailed to take the observations, and no deputy left capable to mind them.

There are stormy weather deterrents met with on board ship at sea, which must be indulgently considered in keeping records of meteorological observations with regularity or persistence on a voyage.

These do not apply to the house comforts available to the enthusiastic meteorologist at home, who has his self-registering instruments, the objective part outside and the recording part inside a closed room or other shelter.

Most officers of the marine on board ship, both of the Royal Navy and Mercantile services, are found now to take much more interest than formerly in meteorology at sea, and they have a very good text-book to read up now in Captain Martin's "Ocean Meteorology." It may be preliminarily stated that the mapping of rainfall regions of the oceans, from observations taken on islands, may be subject to the critical objection that they are really taken on land and not on the open sea.

The cause of the downfall on them is terrestrial mainly, and neither oceanic nor aërial solely, and so none such have been included in these tables and diagrams from any land observatory on shore.

These Tables of Observations of Rainfall at Sea on board ship have been compiled from records furnished by various ships for a period of about 20 years or more.

They were taken on board both classes of ships, sailing ships, and steamers, which passed along the usual routes of traffic in the Atlantic, Indian, and Australian-Chinese Seas, and Pacific Ocean, and both in the Navy and Mercantile Service.

The observations were taken once a day by marine rain gauges, and recorded in the usual log books, in which is entered the position of the ship daily as to latitude and longitude, with daily events.

GENERAL TABLES.—All the tables have been constructed with the division of the records into the two sets of seas, north and south of the equator, next by separating them into the four sets of oceans, Atlantic, Indian, and Eastern Seas, and Pacific Ocean, and then with reference to monthly and annual periods, and the various rates per month and per annum have been calculated.

Lastly, each of the oceans have been divided into belts or zones of greater or less prevalence of rain, and the rates per annum of each again are calculated from the amount of time each ship occupied in passing through each region.

#### ANNUAL GENERAL SUMMARY—OCEAN RAINFALL.

It will be observed that more rain was collected in the North Hemisphere, 139.01 in., than in the South Hemisphere, 105.97 in., and that the rates per annum in the North Hemisphere, 47.95 in., exceeded that in the South, 36.72 in., also that the rates of fall per diem, .42 in., and .37 in. show the same excess in the North Hemisphere over the South Hemisphere.

On the other hand, there were more wet days in the North Hemisphere than in the South, by 329 to 282, and also more total days passed in it by the ships by 1,056 to 994.

Again, on comparing the different seas with each other in the North Hemisphere, most rain, 54.66 in., was collected in the Austro-Chinese Seas, and the least, 13.895 in., in the Indian Ocean.

The rates per annum were greater in the Austro-Chinese Seas, 94.19 in., and least in the Atlantic Ocean, 33.64 in., and the rates of rainfall per wet day were greatest, also .69 in. in the Indian Seas, and least in the Atlantic Ocean, .46 in.

The number of wet days were greatest in the Pacific Seas, 145, and least in the Indian Ocean, 28; and the number of total days passed by the ships was greatest in the Atlantic Ocean, 389, and least, 147, in the Indian Ocean.

In the Southern Hemisphere, the rate per annum was largest, 47.17 in., in the Austro-Chinese Seas, and least, 25.12 in., in the Atlantic Ocean.

The rate of rainfall per wet day was greatest also in the Pacific Seas, .50 in., and least, .24 in., in the Atlantic Ocean also; and the number of wet days, 129, and amount of rain, 60.49 in., in the Austro-

Chinese Seas, exceeded also the wet days, 54, and amount, 13.08 in., noted for the Atlantic.

In each of the separate seas again the rates per annum and rates per wet day in the Northern divisions exceeded those in the Southern regions, which is probably due to the greater amount of aqueous vapour furnished by the southern oceans than by the northern oceans, and that this is carried over the equator to the equatorial rain belt by the crossing of the trades winds from south to north in the equatorial region.

It may be surmised that the cause of the Austro-Chinese Seas furnishing more rain and more wet days is due to the numerous islands scattered over them in both Northern and Southern regions, obstructing the passage of the northern dry trade winds. The reason why the Atlantic Ocean north and south shows least rain may be due to its open seas, with fewer and smaller islands, and over which the dry polar winds blow more uninterruptedly, and in larger sheets from north and south towards the equator.

TABLE I.

## GENERAL MONTHLY SUMMARY OF RAIN.

In the Northern Hemisphere the greater rate per month was found in January, 10.78 in., due to the winter storms, and the least, .29 in., in March, due to the dry spring season.

Increased amounts per month are also seen in May 6.93 in., due to monsoons, and in September, 8.77 in., due to equinoctial seasons.

The rates per wet day are highest in June, .84 in., owing to monsoon weather, and in September, .78 in., due to the equinox, and are least in March, .13 in., due to the dry spring, and in December, .11 in.

In the Southern Hemisphere the greatest rate per month is in December, 6.42 in., due to summer rains, and higher rates per month are also seen in January, 5.06 in., and in February, 5.61 in., from the same cause.

The least rates per month are in October, .33 in., due to dry spring season, and in July, .66 in., to dry winter weather in Southern regions.

The rates per wet day seem to have been highest in February, .53 in., and in April, .54 in., due to the mild summer and autumnal seasons, and the least rates are seen in July, .21 in., and October, .20 in., due to the dry winter and spring seasons in the South.

TABLE II.

SEPARATE OCEANS—RAINFALL. ATLANTIC OCEAN.  
MONTHLY SUMMARY.

Records have not yet been obtained sufficient to fill in all months of the year, in order to show more correct annual results, as those for November, North, are wanting, and also those for April, October, November, and December, South Atlantic.

There has consequently been a larger amount shown collected for the North, 35.56 in., than for the South, 13.06 in., and the number of total wet days show the same thing, 77 for the North and 53 for the South.

However, the rate per annum has been made out, 29.01 in. for North Sea, and 16.55 in., for South Seas, and the rate of fall per wet day is also calculated at .46 in. for the North and .24 in. for the South Atlantic.

All these estimates show less rainfall in the South Atlantic than in the North Atlantic, due to the absence of the rain belt at the equator and the more open seas uninterrupted by islands and the greater areas of dry polar winds from the south-east.

As to the monthly rates, the greatest rainfall occurred for the North in January, 10.44 in., due to winter storms and north equatorial rains, and in September, 7.91 in., due to equinoctial changes and the rain belt, and the driest rates were in April, .17 in., and February, .48 in., due to dry spring seasons.

In the South Seas the greatest rainfall per month was in April, 7.29 in., due to equatorial autumn rains, and the least in September, .01 in., due to dry and spring season.

### TABLE III.

#### INDIAN OCEAN—RAINFALL. MONTHLY SUMMARY.

The records for the whole year are here also incomplete, as there are no returns for January, May, June, and October, in the North, and none for January, October, November, and December, in the South Indian Ocean.

The rates per annum, as usual, are higher in the North, 23.18 in., than in the South, 21.85 in., and the rates of fall in like manner are heavier in the North, .47 in. per wet day, than in the South, .28 in., due to the rain belt north of the equator.

The greatest rate per month in the North Seas was in November, 10.54 in., due to N.-E. squalls in winter equatorial rains, and the least was in July, 1.13 in., at the border of the monsoons, and the heaviest rate per wet day was, of course, in November, 1.23 in., and the least in July, .19 in.

In the South Indian Seas the heaviest rate per month was in February, 5.15 in., due to westerly rains, and the least was in June, 1.63 in., coincident with dry winter; and the rates per wet day varied in like manner from .44 in. in May to .16 in. in June.

Attention is also drawn to the larger proportion of wet days to total days in the South than in the Northern Seas by 32 per cent to 20 per cent., showing the greater prevalence generally of drizzly wet weather in the South to the heavy showers in the North Indian Seas.

### TABLE IV.

#### AUSTRO-CHINESE SEAS—RAINFALL. MONTHLY SUMMARY.

Sufficient records have not been obtained as yet to fill up January and December and February and March, out of the twelve months of the year in the Northern Seas, but those of the South are fairly represented.

As usual, the Northern Seas all show a higher rate per annum, 78.49 in., than the Southern, 46.41 in., and a higher rate of fall per wet day also by .70 in. to .46 in., due to the north rain belt and the numerous islands existing in them, and the special north-western monsoon seasons.



The highest rates per month in the North Seas were in May, 15.98 in., due to south-western monsoons and cyclones, and in September, 11.88 in., due to equinoctial cyclones, and the least rates were in October, 3.08 in., and in November, 1.87 in., in the dry winds of the autumn and winter season. The rates per wet day followed the same order of .98 in. in May, and .31 in. in October, and .50 in. in November after the rainy seasons were over.

In the Southern Seas the highest rates per month were found in January, 11.13 in., due to summer rains, and 7.95 in. in May, due to autumnal seasons, and the least rates were in July, .13 in., due to the dry winter season, and in October, .32 in., due to the dry spring. The rates per wet day were the highest in May, .64 in., and in February, .72 in., and lowest in July, .10 in. and in October, .20 in., for the same reasons.

TABLE V.

## PACIFIC OCEAN—RAINFALL. MONTHLY SUMMARY.

This ocean is the most defective in observations as there are none for the equatorial regions, the most interesting of any, and there are also none at all for seven months in the Southern Seas.

The general totals still continue to show excess of rain in the *Northern* over the Southern Seas by 41.81 in. per annum to 38.07 in. per annum, and in the proportional number of wet days by 173 to 76, due probably to the usual monsoon rains of the Japanese seas in this case, as there is no rain belt to show.

The greatest amount of rain per month in the North Pacific Ocean is estimated for June, 8.02 in., due to the south-western monsoons in the Eastern Seas in the summer, and the least was in February, 2.05 in., due to the dry trade winds of the dry winter season.

In the Southern Seas the greatest rainfall was in June in the winter, also off Australia in the winter storms, 5.50 in., and the least in May, 0.63 in., in the trades in the autumn.

It has to be already noted that there is exhibited much difference in climate between the Eastern and Western North Pacific Seas, as the former have extended south-western monsoons between Japan and New Guinea, and the latter only slight ones off the Mexican coast, all the rest being under trade winds. The great bulk of the Pacific between Australia and South America for over 120 deg. of longitude may probably be found to assimilate to the climate of the South Atlantic and have as little rainfall, which future observation by rain gauge alone can show.

TABLE VI.

## ATLANTIC OCEAN. ZONAL SUMMARY.

The Atlantic Ocean has been divided into four zones of rainfall in the North and four zones in the South, in relation to the greater or less prevalence of rain in each, and with the view of indicating climates depending thereon.

The total estimates for this ocean show an excess of rainfall in the North over the South by 34.10 in. per annum to 24.83 in. per annum, and the rates of fall per wet day show the same thing, being .46 in. in the North and .24 in. in the South.

These are called, respectively, in each hemisphere temperate, extra-tropic, tropic, and equatorial belts, stretching from 52 deg. north and south latitude to the equator.

The heaviest rainfall is recorded from the North equatorial belt at the rate of 133.37 in. per annum, and the next for the South equatorial at 71.44 in. per annum, and these added together exceed by far all the others in amount.

The tropic belts are dry ones, there having been only .81 in. per annum estimated for the North, and 7.23 in. per annum for the South.

The North extra-tropic region seems also to have had but a small rainfall, as only 9.86 in. per annum are estimated for it, but the South extra-tropic one was more favoured with rain, having had 23.21 in. per annum.

This excess seems probably due to the winter season in South latitudes beyond the tropic line, and in the seas lying between the Cape and the Plate, subject to the north-west winds then in the tract of the northern trade winds.

The temperate regions North and South also are strongly contrasted, but in the reverse way to the tropic regions, the former with a rate per annum of 27.72 in., exceeding that of the latter with only 8.76 in. per annum, the difference being probably due to the moister atmospheres hovering round the British Islands.

The rates of rainfall per wet day vary in accordance with the rates per annum, being highest, 1.10 in., in the North equatorial belt, and South equatorial belt, .55 in., and in the North temperate belt, .41 in., and lowest in the North tropical belt, .03 in., and the South tropical belt, .09 in.

TABLE VII.

INDIAN OCEAN. ZONAL SUMMARY.

The expanse of the Indian Ocean is provisionally divided into three regions North of the equator and five regions South of it, owing of course, to the difference of extent of latitudes north and south in it.

They are called North and South equatorial, North and South intra-tropical, North and South tropical, and only South extra-tropic and South temperate zones beyond these.

The greatest rainfall seems to have taken place in the South tropic belt at the rate of 115.81 in. per annum, specially owing to cyclonic storms and winter rains, and in the North equatorial belt, 80.55 in. per annum, as is usually expected.

The lowest rates were found in the North tropic zone, and North intra-tropic, 4.97 in. per annum, owing to the dry regions of the Arabian Gulf and Bengal Seas in the north-east monsoons.

The rates of rainfall per wet day followed the same order, and were .60 in. in the South tropic and .51 in. in the North equatorial, as the highest, and .11 in. in the South extra-tropic and .27 in the North intra-tropic belt.

The total estimates show a provisional excess of rate per annum of North over South of 34.27 in. to 33.28 in., but in other respects the totals are reversed in other oceans, wet days per annum being 72 North and 118 South, and the rate of fall was .47 in. North to .27 in. South, and there was more rain collected South than North of the equator.

TABLE VIII.

## AUSTRO-CHINESE SEAS. ZONAL SUMMARY.

In these seas each region North and South of the equator has been divided into equatorial, intra-tropical, tropical, and extra-tropical and temperate belts.

The rainfall has been very abundant in them all nearly, and more so than in the other oceans examined, and this may be due to the vapours of the Pacific Ocean being driven westwards from their sources, to be condensed on the numerous islands scattered over all these seas, most of which are mountainous and arboriferous.

The highest rates per annum were estimated for the North tropic region, 128.69 in., specially owing to cyclonic rains in the spring and autumn, and in the North equatorial region 107.96 in., as is to be expected always.

The lowest rates per annum were found in the South extra-tropic belt, 9.52 in., where there are more open seas and dry polar winds, and at the North intra-tropic belt, 16.28 in., just outside the great equatorial rain belt.

The totals indicate the great excess of rain per annum of North over South by 93.66 in. to 46.92 in. in which are also shown the rate of fall per wet day of .70 in. to .46 in., demonstrating the influence of the south-western monsoons.

The rates of rainfall per wet day are estimated to be the highest in the North temperate, .85 in., and North tropic, .95 in., owing to tropical storms, and the lowest in the South intra-tropic, .14 in. in the trades.

TABLE IX.

## PACIFIC OCEAN. ZONAL SUMMARY—RAINFALL.

As there have been no observations obtainable as yet of rain-gauge measurements from the equatorial districts of the Pacific Ocean, it has only been possible to distribute the present amounts to three extra-tropical zones on each side of the equator.

These are—in the North Pacific, the temperate, lying between 50 deg. to 41 deg. north latitude, including the voyage from Japan to San Francisco, in the westers, giving an annual rate of 27.73 in. and 207 wet days, or much about what it is in our own British Seas.

The next, the extra-tropic zone, would lie between 40 deg. to 31 deg. north latitude outside the trade winds, and gives an annual amount of 30.31 in. of rain, and an annual rate of 152 wet days.

The tropic zone exceeds both the two previous in amount of rain due to the monsoon rains in the Japanese Seas and would lie between 30 deg. to 20 deg. north latitude, and gives an annual amount of 76.18 in. and an annual rate of 175 wet days.

In the South Pacific the temperate zone will lie between 53 deg. to 40 deg. south latitude and will give an annual amount of only 15.51 in. and an annual rate of only 105 wet days in the latitudes of the west winds.

The next, the extra-tropic zone, would lie between 39 deg. to 30 deg., including Sydney, and Auckland, and New Zealand, and is found to afford the highest annual amount, 70.64 in., due to heavy rains in the Austro-Zealand Seas, and an annual rate of only 60 wet days.



The other tropic zone, lying between 29 deg. to 13 deg. south latitude, exhibits the same anomaly as the last zone, in having less rain instead of more than was expected, but these results may be transposed by subsequent observations.

The annual estimate for rain amounts only to 11.20 in. and the annual rain per wet days to 100, which paucity seems attributable probably to the general dry climate of the south-east trade winds in the open South Pacific Ocean.

The South Pacific Ocean thus indicates that it resembles the climates of the South Atlantic and the Indian Oceans in having less rainfall compared to the North Pacific, by annual estimates of 38.07 in. to 41.39 in.

It will be seen to have had also fewer wet days per annum by 76 to 172, but an anomalous higher rate of rainfall per diem of .50 in. to .24 in., both of which inferences would require further observations to substantiate them, as they do not coincide with general results of the South Atlantic and Indian Oceans.

#### GENERAL NOTES.

##### RECIPROCITY.

An inspection of the General Monthly Summary suggests the idea that there may be reciprocative action observed between the amounts of rainfall on each side of the equator, so that when it is seen to be deficient on one side, it will be found to be increased on the other side, in any period or sea.

This may be noted in the cases of January, 10.78 in. to the North of the equator and 5.06 in. to the South of the equator; March, .29 in. in the North, 3.19 in. in the South; June, 5.51 in. in the North and 1.64 in. in the South; September, 8.77 in. in the North and 2.73 in. in the South; December, .77 in. in the North and 6.42 in. in the South.

In applying this idea to the case of the separate seas, one may see that in the Atlantic in January there were 10.44 in. per mensem in the North Seas and 2.97 in. for the South Seas, and 7.91 in. per mensem in September for the North Seas and only .01 in. for the South Seas, and in July there were 1.81 in. per mensem for the North Seas and only .98 in. for the South Seas.

On the other hand, however, there was less rain estimated per month for the North Seas than for the South Seas in February, April, May, and August—*i.e.*, there was nearly a balance as far as the records went.

For the Indian Ocean, there appears only September as showing a preponderance of rain, 7.16 in. per mensem in the North Seas over 3.55 in. per mensem in the South Seas, and the remaining items being equal or defective.

For the Austro-Chinese Seas records for the middle months of the year exhibit the rainfall of the North Seas preponderating over those of the South Seas for the months of April, May, June, July, August, for the summer, and in September, October; but for November the balance favours the South Seas, and in the summer also.

Finally, the Pacific Ocean shows much about the same results, so far as the data go, as January and March in the winter, and June,



have higher totals of rain in the North Seas than in the South Seas, but in December the balance favours the South Seas in the summer.

The main item that influences the preponderance of rainfall in the North Seas of the Indian and Austro-Chinese Oceans is the prevalence of the south-west monsoons in the summer months in the Arabian, Bengal, and Malayan Seas.

The Eastern Pacific Seas appear to approximate these in the operation of such influences, but the Atlantic Ocean would seem to be dominated by the overwhelming gravity of the equatorial rain belt hanging over the zone north of the equator.

The method of illustrating ocean rainfall by latitudinal parallel belts and zones may be indicated as only a temporary expedient to exhibit results, which would be meagrely shown in any other way, owing to the great paucity of actual observations over such immense spaces.

It was also found useful in estimating rainfall by the month and year from the casual data given by ships passing so many days through definite spaces defined by parallels of latitude.

PACIFIC OCEAN.—Captain J. Cook's voyages, H.M.S. "Resolution." Equatorial Regions.—As there were no observations by rain-gauge available for the Central Pacific Ocean, exclusive of the Austro-Chinese Seas, recourse was had to the logs of Captain Cook's voyages in those waters, from 1772 to 1780, for information respecting those latitudes, inside the tropic lines of Cancer and Capricorn.

The notes on the weather were found as ample as desired, and all rainy days seem to have been registered, and these amounted to only 36 days' rain North of the equator to 29 deg., so that it may be surmised that there existed there no equatorial rain belt, as seen in the Atlantic Ocean.

This was borne out by calculating the rates of wet days per annum for those latitudes which showed that there were only 138 rainy days per annum north of the equator, and 77 days South of the equator to 29 deg. each way.

The computation of the rest of the latitudes run over in the Pacific Ocean was of interest, as bearing on those already found by the S.S. "Oceanic" and H.M.S. "Pearl," and which showed rates of 166 rainy days per annum North of the equator, to 88 rainy days South of the equator, so that there is double the number of wet days north over south latitudes.

The most rainy latitudes were seen in Cook's voyages to be the 40 degs. and the 60 degs. in north hemispheres, or the regions of Japan and Behring Seas, and the 30 degs. and 60 degs. in the south hemisphere, or the regions of New Zealand and Cape Horn.

It may thus be conjectured that the aqueous vapours swept up by the south-east trade winds, as in the Atlantic and Indian Oceans, are mostly precipitated in the North Pacific Ocean by means of the storms and accompanying showers.

The name Pacific seems only to belong to the South Seas in reality, and to be only conventionally given to the North Sea, which is debited in the logs with as bad weather as any in the Atlantic Ocean itself.

In the Pacific Ocean, generally, on summarising those observations monthly, it was found that much the same conditions prevailed, as

there were 160 wet days per annum calculated for the North Seas, and 73 wet days per annum for the South Pacific.

April in the North Pacific had the greatest number of wet days, 20 per mensem, and the next highest numbers were 17 days per mensem for May in the north, and in the south hemisphere 12 days for April and 8 days for August.

These amounts would indicate most rainy days in the spring in the North Pacific and in the autumn in the South Pacific, in the course of Captain J. Cook's voyages.

This transference of the aqueous vapour, from North to South of the equator in the Pacific Ocean, may be assumed to favour Maury's idea of crossing of the trades winds in this as in other oceans.

It may make its passage to the north by taking the north-east trades on the left flank, and doubling round by New Guinea and Japan to Behring Seas, and falling in rains in the typhoons and monsoons of those regions.

Reference was also made to the logs of Captain La Perouse's voyages in the Pacific Ocean in the years 1785 to 1788 for the rainfall between the latitudes of 29 deg. north and 29 deg. south of the equator, and they coincide mainly with Captain Cook's records—10 years before. They observed only six days' rain north of the equator, from 0 deg. to 19 deg. north latitude, and only four days' rain south of the equator, from 0 deg. to 19 deg. south latitude, otherwise at the rates of 28 days' rain and 19 days' rain per annum, respectively.

There was, however, recorded an increase of rain between the 20 deg. and 30 deg. to 33 days in the North and eight days in the South, coincident with the tropic parallels of Cancer and Capricorn.

It will be surmised then that the equatorial precipitation in the Pacific Ocean is located chiefly to the islands of the Eastern or New Guinea side, and is transferred thence from the Western or American side, which was found to be comparatively dry.

The immense accumulation of rain in the equatorial rain belts must raise the level of the seas there, which may be able to find a sluice to run off by the Gulf Stream, Japan current and Mozambique currents off to lower horizons. If the equatorial rainfall were frozen as it fell for ages there would have been raised by this time a glacier ridge as high as the ice caps of Greenland or Antarctica.

#### BALANCE OF PRECIPITATION IN NORTH AND SOUTH HEMISPHERES.

As it appears there are about twice as many rainy days per annum North of the equator in the Pacific Ocean over the South, so the amount of rainfall may be considerably in excess in the North over the South Ocean—probably  $\frac{1}{4}$  more inches. The North Ocean is further fed by large rivers, which are absent on the coasts of the South Ocean, so there must be an accumulation of fresh water several inches deep in the North Pacific over the South Pacific.

We may state, therefore, that this excess may be rectified by the great southerly currents along the coasts of Mexico and Australia, carrying fresh supplies of water to be evaporated from the South Pacific Ocean by the south-east trade winds.

Similar interchange of water will be found to take place in the

Indian Ocean by the Mozambique current carrying the excess of precipitation by monsoon rains and large rivers from the North to the South, along the African side. Again, in the Atlantic Ocean, where the difference in inches amounted to eight in the North over the South, the excess would be transferred to the South by the Guinea and Brazilian currents coming down along Africa and South America, to be evaporated again by the south-east trades.

It may be borne in mind that a considerable difference exists between the conditions of rainfall at sea and rainfall on land, in that the land possesses mountain ranges, which are the chief producers of rain, as in Devonshire and Westmorland.

In the open sea, therefore, we should expect to find fewer wet days and a less amount of rain than on land on equal areas of large extent, as in the Pacific Ocean there were only 166 days per annum of rain North, and only 88 days per annum of rain South of the equator, and in the Atlantic Ocean there were only 34 inches of rain per annum North, and 24 inches of rain South of the equator.

The causes of downfall in the open sea should, therefore, be strictly aerial, and manufactured hygrometrically above it in the clouds, moving at a considerable height above the ocean surface, and presumably, therefore, uninfluenced by it to any considerable extent to cause precipitation from them.

#### BIBLIOGRAPHY.

Scarcely any mention is made of Ocean Rainfall in the Meteorological Text Books, either by way of days, or inches, so that this is one of the first attempts made to calculate and summarise observations by gauges on rainfall at sea.

Captain Martin, R.N., in his text book on Ocean Meteorology, introduces rainfall, but mentions only land or observatory records, which are different from ocean records in the same latitudes both as to quantity and season.

Elementary Meteorology, by Scott, alludes to discussions on rainless regions in the trades winds, but says nothing about the actual rainfall at sea, in amount of frequency.

Introductory Meteorology, by Buchan, mentions rainy days by latitudes, tropics, and calm belts, but does not differentiate land from sea observations, and there is no estimation by gauges and inches alluded to.

Modern Meteorology, by Waldo, discusses rainfall on the various continents, and its variations and frequency, but does not in the open sea, and hopes that islands in the Atlantic Ocean would serve to indicate the rain at sea, but which, however, have not been found to be representative in any way.

Course of Meteorology, by Kaemitz, does not appear to mention rainfall at sea in any way.

Captain Maury in his Physical Geography of the Sea alludes to the summary of rainy days in the ocean taken from ships' log books, and gives a diagram of storms and rains by days in the North and South Atlantic Ocean for 12 years, but does not say that rain gauge observations were taken generally.





## RAINFALL AT SEA.

MONTHLY SUMMARY.—ATLANTIC OCEAN.—1864-1875-80.

Month.	Rain—Inches.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Totals, Means.	
North.	Wet Days.														
Westers. Trades. Cyclone.	Wet Days per Mens.....	16	6	9	6	5	4	6	4	8	7	10	12	73	
	Rate per Mens.....	10·44	·48	·81	1·66	1·28	4·43	1·81	·89	7·91	3·10	1·31	1·26	31·37	
	Total Days .....	19	24	14	24	64	57	53	72	29	35	16	16	433	
	Rate per Wet Days.....	·66	·07	·09	·26	·27	1·05	·32	·23	1·09	·45	·14	·11	·42	
	Wet Days ..	10	5	4	5	10	8	10	9	7	8	5	6	87	
Calms.	Rain .....	6·665	·385	·38	1·335	2·730	8·42	3·205	2·135	7·65	3·62	·70	·675	37·21	Equa- tor.
Westers. Trades. Calms.	Rain .....	1·19	·795	·625	3·99	1·96	2·525	1·969	·825	·01	·17	·43	1·675	16·164	
	Wet Days.....	6	7	3	7	7	11	12	3	2	2	6	4	70	
	Rate per Wet Days.....	·20	·11	·8	·59	·28	·23	·16	·27	·00	·08	·07	·42	·23	
	Total Days .....	12	23	31	36	19	36	59	12	19	6	14	30	297	
	Rate per Mens.....	2·97	1·05	·625	4·05	3·09	2·10	·98	2·06	·01	·85	·88	1·675	20·07	
South.	Wet Days per Mens.....	15	10	3	15	12	9	6	8	3	10	12	4	86	
	Wet Days—Totals .....	16	12	7	12	17	19	22	12	9	10	11	10		157
Totals.	Rain—Inches .....	7·855	1·180	1·005	5·325	4·690	10·945	5·174	2·960	·775	3·790	1·130	2·350		53·374

VOYAGES—H.M.S. Pearl ; S.S. Java ; R.S. Northfleet ; R.S. Melbourne ; S.S. Valparaiso ; S.S. Tagus.

RAINFALL AT SEA.  
MONTHLY SUMMARY.—INDIAN OCEAN.—1864-1875.

North.	Months.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Totals, Means.	8 months.
Calms. Trades. Cyclone. Monsoons.	Wet Days per Mens.....	...	7	0	6	...	...	6	0	18	...	9	0	48	Equa- tor.
	Rate per Mens.....	...	5.08	0	2.01	...	...	1.13	0	7.16	...	10.54	0	23.18	
	Total Days .....	...	26	31	29	...	...	21	2	18	...	7	11	145	
	Rate per Wet Day .....	...	.73	0	.39	...	...	.19	0	.39	...	1.23	0	.49	
	Wet Days.....	...	6	0	5	...	..	4	0	11	...	2	0	29	
	Rain .....	...	4.41	0	1.95	...	...	.77	0	4.30	...	2.46	0	13.985	
Calms. Trades. Cyclone.	Rain .....	...	1.89	1.575	2.01	4.04	1.63	0	6.210	2.962	...	...	...	21.312	8 months.
	Wet Days .....	...	5	10	7	9	10	0	28	8	...	...	...	77	
	Rate per Wet Day .....	...	.37	.15	.29	.44	.16	0	.22	.37	...	...	...	.28	
	Total Days .....	...	11	23	23	43	30	6	75	25	...	...	...	236	
	Rate per Mens.....	...	5.15	2.05	2.62	2.79	1.63	0	2.48	3.55	..	...	...	21.85	
	Wet Days per Mens. ....	...	14	13	9	6	10	0	10	9	...	...	...	79	
South.	Totals .....	...									...				

Voyages—H.M.S. Pearl; R.S. Melbourne; S.S. Hong-Kong; R.S. Northfleet; H.M.S. Sylvia.

# RAINFALL AT SEA. MONTHLY SUMMARY.—AUSTRO-CHINESE SEAS.—1864-1875.

North.	Months.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Totals, Means.	10 months. Equa- tor.
North-West Monsoons. Cyclone.	Rate Wet Days per Mens. ...	...	0	0	15	17	12	12	31	13	10	4	...	112	
	Rate per Mens. ....	...	0	0	7.58	15.98	8.11	7.08	6.75	11.88	3.08	1.87	...	78.49	
	Total Days .....	...	2	27	22	24	28	39	2	43	16	8	...	211	
	Rate per Wet Day .....	...	0	0	.50	.98	.68	.57	.22	.89	.31	.50	...	.70	
	Wet Days .....	...	0	0	11	13	11	16	2	19	5	1	...	78	
	Rain .....	...	0	0	5.56	12.79	7.57	9.21	.45	17.04	1.54	.50	...	54.66	
North-West Monsoons. Trades.	Rain .....	6.31	13.025	4.77	11.650	7.690	1.360	.205	1.670	3.895	.405	2.88	6.425	59.260	
	Wet Days .....	17	18	17	20	12	5	2	7	7	2	6	15	129	
	Rate per Wet Day .....	.37	.72	.28	.58	.64	.27	.10	.24	.55	.20	.48	.42	.46	
	Total Days .....	47	50	39	66	29	24	47	41	31	38	30	31	466	
	Rate per Mens. ....	11.13	7.81	3.90	5.29	7.95	1.70	.13	1.22	3.89	.32	2.88	6.42	46.41	
	Rate Wet Days per Mens. ...	11	10	13	9	13	6	1	5	7	1	6	15	101	
South.	Totals .....														

Voyages—H.M.S. Pearl : R.S. Northfleet ; S.S. Hong-Kong ; H.M.S. Sylvia.

RAINFALL AT SEA.  
MONTHLY SUMMARY.—PACIFIC OCEAN, WEST.—1875-1880.

North.	Months.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Totals, Means.	Equa- tor.	6 months	
Monsoons and Trades.	Wet Days per Month .....	18	22	15	22	14	14	13	0	13	12	15	175	173			
	Rain per Mens. ....	3·61	2·05	4·63	3·06	1·86	8·02	5·21	0	2·92	4·10	2·55	2·80	41·81			
	Total Days .....	22	19	18	20	56	24	32	17	29	31	18	17	305			
	Rate per Wet Day .....	·20	·10	·31	·13	·13	·58	·40	0	·24	·31	·17	·17	·24			
	Wet Days .....	13	14	9	15	26	11	14	0	12	13	9	0	145			
	Rain .....	2·65	1·30	2·81	2·04	3·47	6·42	5·55	0	2·92	4·10	1·53	1·59	34·88			
Trades and West Winds.	Rain .....	0	1·530	1·525	...	·400	4·582	...	...	...	...	...	2·960	11 057			
	Wet Days .....	0	10	3	...	4	3	...	...	...	...	...	2	22			
	Rate per Wet Day .....	0	·15	·51	...	·11	1·51	...	...	...	...	...	1·48	·50			
	Total Days .....	13	23	15	...	22	25	...	...	...	...	...	8	106			
	Rain per Mens. ....	0	2·00	3·05	...	·63	5·50	...	...	...	...	...	11·10	38·07			
	Wet Day per Mens. ....	0	13	6	...	6	4	...	...	...	...	...	8	76			
South.	Totals .....																

VOYAGES—H.M.S. Pearl ; S.S. Oceanic.



OCEAN RAINFALL.  
GENERAL ZONAL SUMMARY.—1864-75-76-81.

	Amounts, Rates.	Atlantic Ocean.	Indian Ocean.	Austro-Chinese Seas.	Pacific Ocean.	Totals, Means.	
North Hemisphere.	Wet Days per Annum.....	74	72	133	173	144	
	Rate per Annum—Inches ...	33·64	34·42	94·19	41·82	47·95	
	Total Days .....	389	147	215	305	1056	
	Rate per Wet Day .....	·46	·47	·69	·24	·42	
	Wet Days.....	76	28	70	145	329	
	Rain—Inches .....	35·58	13·895	54·66	34·88	139·01	Equa- tor.
	Rain—Inches .....	13·08	21·35	68·49	11·057	105·97	
South Hemisphere.	Wet Days.....	54	77	129	22	282	
	Rain per Wet Day ...	·24	·27	·47	·50	·37	
	Total Days .....	190	230	468	106	994	
	Rate per Annum—Inches ..	25·12	33·88	47·17	38·05	36·72	
	Wet Days per Annum .....	102	118	102	76	88	

# ATLANTIC OCEAN—RAINFALL.

ZONAL SUMMARY.—1864-1884.

Zones.	Latitude.	Rain— Inches.	Wet Days.	Rate per Wet Day.	Total Days.	Rate per Annum— Inches.	Wet Days per Annum.	Equa- tor.
North Atlantic .....		37.150	81	.37	416	32.59	71	
Temperate .....	52°—40°	16.895	42	.40	226	27.29	67	
Extra-Tropic .....	39°—30°	1.70	16	.10	67	9.26	87	
Tropic .....	29°—12°	.135	4	.03	71	.68	21	
Equatorial .....	11°—0°	18.42	19	.97	52	128.94	133	
Equatorial .....	0°—4°	3.944	9	.43	25	58.40	149	
Tropic .....	5°—17°	.915	10	.07	49	6.82	74	
Extra-Tropic .....	18°—42°	10.17	43	.42	184	20.34	94	
Temperate .....	43°—51°	.515	3	.17	17	11.05	64	
	50°—60°	.45	3	.15	8	20.53	137	
South Atlantic .....		15.994	68	.25	283	20.67	88	

VOYAGES—H.M.S. Pearl; S.S. Java, Valparaiso, Tagus; R.S. Northfleet, Melbourne.

## INDIAN OCEAN—RAINFALL.

ZONAL SUMMARY.—1864-1875.

Zones.	Latitude.	Rain— Inches.	Wet Days.	Rate per Wet Day.	Total Days.	Rate per Annum— Inches.	Wet Days per Annum.	
Indian Ocean .....		13·895	29	·47	148	34·27	72	
Extra-Tropic .....	...	...	...	...	...	...	...	
Tropic .....	30°—18°	...	...	...	10	...	...	
Intra-Tropic .....	17°—8°	1·09	4	·27	80	4·97	18	
Equatorial .....	7°—8°	12·80	25	·51	58	80·55	157	Equa- tor.
Equatorial .....	0°—4°	3·31	7	·47	19	68·58	134	
Intra-Tropic .....	5°—12°	1·36	7	·19	19	26·12	134	
Tropic .....	13°—19°	7·30	12	·60	23	115·84	190	
Extra-Tropic .....	20°—30°	1·15	10	·11	35	11·99	104	
Temperate .....	31°—50°	8·192	41	·19	141	21·20	106	
South Indian .....		21·312	77	·27	237	33·28	118	

VOYAGES—H.M.S. Sylvia; R.S. Melbourne; S.S. Hong Kong; H.M.S. Pearl; R.S. Northfleet.

# AUSTRO-CHINESE SEAS—RAINFALL.

ZONAL SUMMARY.—1864-1875.

	Zones.	Latitude.	Rain— Inches.	Wet Days.	Rate per Wet Day.	Total Days.	Rate per Annum— Inches.	Wet Days per Annum.	
	North Seas.....		54·66	78	·70	213	93·66	133	
	Temperate .....	40°—24°	13·64	16	·85	54	92·01	108	
	Extra-Tropic .....	23°—19°	3·11	6	·52	30	37·83	73	
	Tropic .....	18°—10°	21·86	23	·95	62	128·69	135	
	Intra-Tropic .....	9°—8°	·67	3	·22	15	16·28	73	
	Equatorial .....	7°—0°	15·38	30	·51	52	107·96	210	Equa- tor.
	Equatorial .....	0°—5°	7·32	15	·48	29	91·50	188	
	Intra-Tropic .....	6°—13°	1·41	10	·14	14	36·66	260	
	Tropic .....	14°—24°	47·21	92	·51	289	59·62	116	
	Extra Tropic .....	25°—40°	3·32	12	·28	123	9·52	35	
	Temperate .....	41°—50°	...	...	...	6	...	...	
	South Seas.....		59·26	129	·46	461	46·92	102	

VOYAGES—R.S. Northfleet; H.M.S. Pearl; S.S. Hong-Kong; H.M.S. Sylvia.



## PACIFIC OCEAN—RAINFALL.

ZONES.—1875-1880.

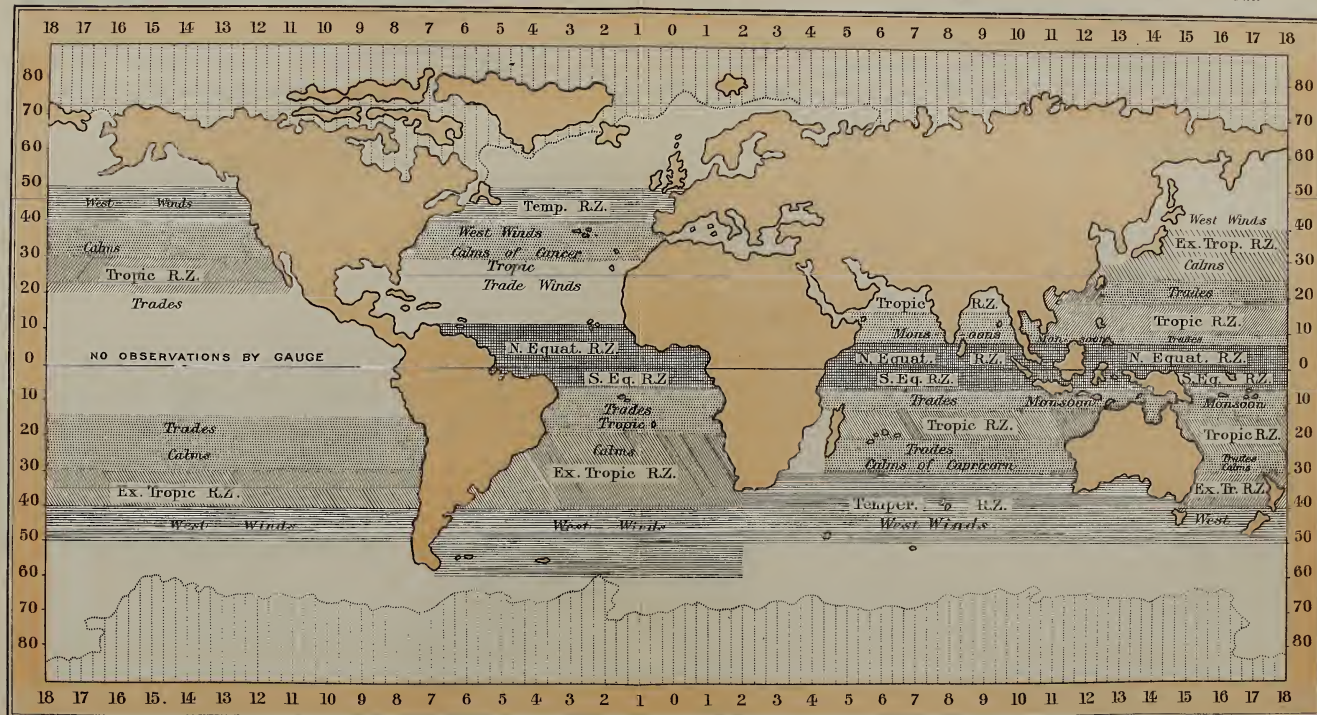
Zones.	Latitude.	Rain— Inches.	Wet Days.	Rate per Wet Day.	Total Days.	Rate per Annum— Inches.	Wet Days per Annum.	
North Pacific.....		84·87	145	·24	307	41·39	172	
Temperate.....	50°—41°	6·03	45	·13	79	27·73	207	
Extra-Tropic .....	40°—31°	12·63	63	·20	151	30·31	152	
Tropic.....	30°—20°	16·21	37	·44	77	76·18	175	
Equa- tor.	0—19° 0—12°		(No observation (No observation by Gauge.) by Gauge.)					Equa- tor.
Tropic.....	18°—29°	·460	4	·115	15	11·20	100	
Extra-Tropic .....	30°—39°	9·067	9	1·01	55	70·64	60	
Temperate.....	40°—53°	1·530	10	·15	36	15·51	105	
South Pacific.....		11·057	23	·50	106	38·07	76	

VOYAGES—S.S. Oceanic; H.M.S. Pearl.

# MERCATOR'S CHART OF THE WORLD.

## REGIONS AND ZONES OF OCEAN RAINFALL.

Atlantic Region	North 0°—11°—128 in.	Tropic—North 12°—29°—68 in.	Ex. Tropic—North 30°—39°—9 in.	Temper.—North 40°—52°—27 in.
	South 0°—4°—58 in.	South 5°—17°—6 in.	South 18°—42°—20 in.	South 43°—51°—11 in.
Indian Region	North 0°—7°—80 in.	Intra—North 8°—17°—4 in.	Tropic—North 18°—30°—0	Ex. Tropic—N. none.
	South 0°—4°—63 in.	Tropic—South 5°—12°—26 in.	South 13°—19°—115 in.	S. 20°—30°—11 in.
				S. 39°—50°—21 in.



E. & S. Livingstone, Edinburgh.

East Pacific Region	North 0°—7°—107 in.	Intra—North 8°—9°—16 in.	Tropic—North 10°—18°—128 in.	Ex. Tropic—North 19°—23°—37 in.	Temper.—N. 24°—40°—92 in.
	South 0°—5°—91 in.	Tropic—South 6°—13°—36 in.	South 14°—24°—59 in.	Tropic—South 25°—40°—9 in.	S. 41°—50°—0
West Pacific Region	North Tropic 20°—30°—76 in.		Ex. Tropic 31°—40°—30 in.		Temperate 41°—50°—27 in.
	South Tropic 13°—29°—11 in.		Ex. Tropic 30°—39°—70 in.		Temperate 40°—53°—15 in.



## THE MUSICAL PHILOSOPHY OF ANCIENT GREECE.

By Mr. R. C. PHILLIPS.

[Following an address to the Society, in the Library, Wednesday, March 26th, 1893, at 7-30 p.m.]

LIBERALLY interpreting the objects of the Manchester Geographical Society, the Council lately afforded me an opportunity of bringing the subject of Ancient Greek music before the members, and of demonstrating, by means of experiment, the great and varied beauty of the systems of harmony and melody deducible from ancient theory, and actually used in the classical period.

It has been judged desirable to place on permanent record some details of the theory and practice of this art, which was considered of superhuman origin, and worthy of the careful study of the greatest intellects known in the world's history.

The main features of the case are as follows : Beginning with Pythagoras, and augmented by the Alexandrian geometers Archytas, Eratosthenes, Didymus, Euclid, Claudius Ptolemy, and many others, we have fragmentary records of a musical theory which formed an important part of polite education, and which is referred to by Plutarch as a matter of common knowledge ; but shortly after the second century of our era the true significance of these writings was lost, and has since been very imperfectly understood.

During the last few centuries a theory of consonance has received considerable development ; but, being mistaken for a complete philosophy of harmony, the ancient view is now very generally considered worthless, and fit only for oblivion.

Yet the doctrines which can be gleaned from the philosophers of Alexandria, together with the tables of Alypius, make it possible to reconstruct the ancient theory—a theory of far wider import than any now current, and applicable even to the tempered scale of the present day.

If this contention be true, it forms an ample apology for an attempt which must contain many imperfections, often fall short of the whole truth, and partly rest on inference rather than on the explicit declaration of ancient documents.

It is necessary to assume that the reader is acquainted with the technical nomenclature of the subject, and with the more important ratios of vibration, 2 : 1 the octave, 3 : 2 the fifth, 4 : 3 the fourth, information which can be found in most books on acoustics, including Tyndall, Lardner, Helmholtz, and numerous others.

If we wish to compare two notes which do not differ greatly in pitch, and whose rates of vibration are known, we can do so by the graphic



method of representing them by two rows of dots, commencing together, and extending, say, from left to right. If the acuter series be the uppermost, we shall notice that the intervals between its dots are somewhat smaller than in the graver, the lower; the second dot of the upper will be a little to the left of the corresponding lower; the third of the upper will be more widely distant from the third lower, and so on, until at last the twentieth, say, of the upper row will coincide with the nineteenth of the lower, or nearly so. Now the Greek theory postulates that this coincidence ought to be exact, otherwise the notes are not properly related as consecutive notes of a musical system. So if the vibrations coincide after any other given number instead of those supposed, the correspondence should be accurate. In these cases the more acute note will make *one more* vibration than the lower in some whole number of vibrations; so that the fraction expressing the ratio of vibration has its numerator greater than the denominator *by one*. Such fractions

are  $\frac{2}{1}, \frac{3}{2}, \frac{4}{3}, \dots, \frac{9}{8}, \frac{10}{9}$ , etc.; they are called super or sesquiparticular ratios. Those just figured are called diapason or octave, sesquialtera, sesquitercia, sesquioctave, sesquinona, and so on for others. This is sufficient to understand Euclid when he says: "Music originates in multiple and superparticular ratios." (Not that it wholly consists of such intervals, but *originates*).

But no instrument can be tuned with entire accuracy, and if the error be so small as to be inaudible it may be ignored in practice.

This is well expressed by Claudius Ptolemy, who says: "The ear seeks the approximate, and approves the exact; reason seeks the exact, and approves the approximate."

As an application of this doctrine, suppose we increase the ratio  $\frac{20}{19}$  by one vibration in 1215, which is inaudible to many, unless occurring in a false unison or octave, we have  $\frac{1216}{1215} \times \frac{20}{19} = \frac{256}{243}$ , the *limma* of the ditonic or Pythagorean system.

Now, although the inaccuracy of the limma, as thus shown, seems very trifling, it did not escape criticism. Plato, we are told, was much disturbed at finding it to be an illegitimate step, false in theory, for in practice he certainly could not have detected the difference between the limma and the ratio 20 : 19.

Claudius Ptolemy seems to have looked on the limma with a certain amount of suspicion, though he does not condemn its use, probably considering it as a licence not entitled to full approval.

Had the limma been capable of division (and by division superparticular division is always meant) into two intervals of sufficiently large dimensions, there would be no objection to the use, thus divided, of the interval, though faulty as a whole; but the only division of which it is capable besides the one already given,  $\frac{20}{19} \times \frac{1216}{1215}$  is  $\frac{28}{27} \times \frac{64}{63}$ , and the latter of these was considered too small for practical use.

As the use of the limma in a diatonic scale effects a great simplification of the scale, we may well look upon the minute error as a tempera-

ment, a departure from exact truth for practical convenience, somewhat analagous to the tempering of our present scale. But there is a notable difference between our modes of procedure. While we purposely falsify our fourths and fifths by (approximately) one vibration in 885, to the deterioration of our most sensitive consonances, the limma only affected the very dissonant semitone, leaving the fourths and fifths perfect. In amount, too, the ancient temperament was considerably less than ours, as the above figures demonstrate.

In both cases the major thirds are compound, yet accurately divisible; in the ditonic  $\frac{81}{64}$ , or  $\frac{9}{8} \times \frac{9}{8}$ ; in the modern,  $\frac{63}{50}$  or  $\frac{6}{5} \times \frac{21}{20}$ .

Thus the major thirds are in both cases dissonant; the ancient note belonging more properly to a diatonic, the modern to a chromatic scale.

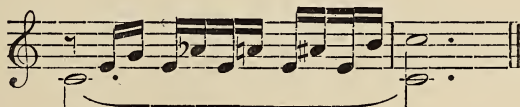
Euclid's law, put in a more tangible form, amounts to this: Any ratio, however complicated, is perfectly correct if it be arrived at by super-particular steps, and so quitted; the series of steps beginning and ending with consonances.

Thus, if we play the following:—



of which the C E G C are supposed to be truly consonant, the dissonances passed through by the intermediate quavers are correct provided that their scale proceeds by sesquiparticulate intervals. Even though the B be not a consonant fifth, nor the A a consonant fourth, from E, the music will not sound faulty, nor indeed *be* so.

Euclid's guarded statement does not prohibit certain licences which may be looked on as natural corollaries of the law; the following variation of the passage could hardly be considered faulty:—



Here no skip after the first two is necessarily superparticulate, but the passage will be found to convey the same fundamental idea as the former, from which it is derived. The extent to which such licences are allowable will probably vary in numerous ways, and at various times and places; no enumeration of them is possible. All that I wish to show is that they are not entirely prohibited by the theory under consideration.

One more remark concerning theory must be made, which seems almost too simple to require notice. A scale-step may be out of tune to any extent, if only it be *not used*. The notes may be of value in other relations, but incapable of properly following each other. Consequently, a scale is not necessarily valueless on account of the occurrence of a compound interval therein. These I believe to be the principles of harmony and melody as accepted by the great philosophers of Alexandria.

They are as unpretentious, as definite, and nearly as easy to grasp as

are the axioms of Euclid; and, I thoroughly believe, as true. But as in the one case, so in the other, the attention is taxed in the working out of the practical details to which they lead, and as amply repaid by the beauty and variety of the results.

Let us now study the practical application of these principles.

The stringed instruments of the Greeks varied much in form, but for our purpose we may take the "cythara" to be any box or frame provided with strings of a suitable length and tension to extend from the A, first space in the bass, to A, second space in the treble stave, or thereabouts.

We may omit all mention of systems prior to Pythagoras, and begin with the celebrated ditonic system, also called the great, the immutable.

In this system, certain strings strictly corresponded with the "standing strings" of subsequent inventions; it is well to consider them first. They were the following:—

A B      E      A B      D E      A

where the three A's were in octave relation; and each octave divided into a fifth, A E, and a fourth, E A. These fifths were then divided into a sesquioctave tone, A B, and a fourth, B E. Lastly, in the upper octave the note D was made to divide the octave into the fourth, A D, and the fifth, D A. Consequently D E was also a sesquioctave tone,  $\frac{9}{8}$ .

The double octave is now divided into tones and fourths; the fourths being B E, E A, A D, B E, E A; and these intervals, when subdivided by two strings each, were the *tetrachords* which formed the scale. The lowest A did not enter into any of these tetrachords, but was considered as a note separate from them. The tetrachords had their several names, these being—

B E Hypaton.  
E A Meson.  
A D Synemmenon.  
B E Diezeugmenon.  
E A Hyperboleon.

The middle A B, and probably the lower also, were called the diazeutic intervals, or intervals of separation.

Such was the *relative* tuning of the "standing strings" not only in the diatonic, but in *all* the systems; until, as Plutarch complains, the musicians tampered with them as with all the others, giving them incommensurable ratios to suit their systems, much as has been done in modern times. It must be carefully noted that the D E of the upper octave was always a sesquioctave tone, whatever the pitch of the lower D might be.

If now we know how the tetrachords are divided, we shall know the whole system; so far the law of superparticulars has been carried out in its entirety. It is here departed from in the adoption of the limma, the division being by  $\frac{256}{243}$ ,  $\frac{9}{8}$  and  $\frac{9}{8}$ , giving the following system:—

$$A \frac{9}{8} B \frac{256}{243} C \frac{9}{8} D \frac{9}{8} E \frac{256}{243} F \frac{9}{8} G \frac{9}{8} \left( \begin{array}{c} A \frac{9}{8} B \frac{256}{243} C \frac{9}{8} D \frac{9}{8} \\ A \frac{256}{243} B \frac{9}{8} C \frac{9}{8} D \end{array} \right) E \frac{256}{243} F \frac{9}{8} G \frac{9}{8} A$$

These notes, or rather strings, had the following names :—

Tetrachord Hyperboleon	{	A	Nete hyperboleon.	Tetrachord Synemmenon	{	D	Nete synemmenon.
		G	Paranete „			C	Paranete „
		F	Trite „			B $\flat$	Trite „
		E	Nete diezeugmenon.			A	Mese „
		D	Paranete „				
Tetrachord Diezeugmenon	{	C	Trite „				
		B	Paramese				
		A	Mese				
		G	Lichanos meson				
		F	Parhypate „				
Tetrachord Meson	{	E	Hypate „				
		D	Lichanos hypaton.				
		C	Parhypate „				
		B	Hypate „				
		A	Proslambanomenos.				
Tetrachord Hypaton	{						

(The lichani and paranetæ were sometimes simply called diatonos, chromaticos, harmonicos, in the three *genera*, the diatonic, chromatic and harmonic, severally.)

There are thus sixteen strings, eight in the lower octave, nine in the upper, the middle, mese, being common to both. Through the use of the limma the ratios of all five tetrachords are identical, and the C D of the diezeugmenon have the same pitch as in the synemmenon.

The method of dividing the tetrachords with accuracy is very simple. After tuning the standing sounds, tune the lower D, then in fourths above or fifths below, as occasion may require, D G, G C, C F, F B $\flat$ .

The tuning is thus a series of fifths, or their inversions, of which A is the third term, B-E-A-D-G-C-F-B $\flat$ ; or, as it is often expressed, the Pythagorean scale was tuned by perfect fifths.

But the series did not start from A; rather from B, as the above series shows.

A certain reference to the copy in the British Museum of Meibomius' edition of Euclid's section of the canon (or monochord), states that he stopped short of B $\flat$ , trite synemmenon; and there appears a foot-note to the effect that this is supplied by Nicomachus, of Gerasa. Further, it is stated that Nicomachus calls the interval B $\flat$  B, which is not a tetrachordal step, a hemitone. We do not know with certainty what interval is meant by this term, but it turns out to be very approximately the diatonic semitone,  $\frac{16}{15}$ , of modern theorists. It is accurately a com-

pound of  $\frac{16}{15}$  and two very small superparticular ratios,  $\frac{945}{944}$  and  $\frac{14337}{14336}$ ; and is involved in the theorem often attributed to Helmholtz, that eight true fifths and a consonant major third are very nearly equal to five octaves. They really exceed five octaves by the small fractions just given.

The question may be properly asked, What is the actual effect of the ditonic system? Blaserna informs us that M. Cornu experimented on the unaccompanied intonation of singers and violinists of note, and he found that the scale naturally adopted by them was very nearly the



Pythagorean, not the so-called "true" scale nor the tempered scale, which last they were in the habit of hearing every day of their lives. Surely no further answer is necessary.

Subsequent philosophers discovered other and more accurate divisions of the tetrachords, but in these cases the C of the tetrachords diezeugmenon and synemmenon would differ in pitch. It is thought by some that a compromise was made, and very probably this was often done; but a study of the tables of Alypius leads me to the belief that although the D was identical in both tetrachords and only the two C's incompatible, to meet the difficulty two more strings were added to the cythara, making a total of eighteen. It is known that the number was increased at some period to more than sixteen.

According to Alypius the tuning now ran—

Hypaton.				Meson.				Synn.				Diez.				Hyperbol.			
A	B	C	D	E	F	G	A	B	C	D		B	C	D	E	F	G	A	

and we have free scope for filling in the tetrachords, remembering, however, that D E of the diezeugmenon must be superoctave.

For ease of reference, it is best here to give the tetrachords of all the genera and species which have been handed down to us by Claudius Ptolemy as those in most esteem.

Sir John Hawkins gives the following list :—

	Diatonic.			Chromatic.			Harmonic.		
Archytas .....	28	8	9	28	243	32	28	36	5
	$\frac{27}{27} \times \frac{7}{7} \times \frac{8}{8}$			$\frac{27}{27} \times \frac{224}{224} \times \frac{32}{27}$			$\frac{27}{27} \times \frac{35}{35} \times \frac{4}{4}$		
Eratosthenes...	256	9	9	20	19	6	40	39	19
	$\frac{243}{243} \times \frac{8}{8} \times \frac{8}{8}$			$\frac{19}{19} \times \frac{18}{18} \times \frac{5}{5}$			$\frac{39}{39} \times \frac{38}{38} \times \frac{15}{15}$		
Didymus .....	16	10	9	16	25	6	32	31	5
	$\frac{15}{15} \times \frac{9}{9} \times \frac{8}{8}$			$\frac{15}{15} \times \frac{24}{24} \times \frac{5}{5}$			$\frac{31}{31} \times \frac{30}{30} \times \frac{4}{4}$		

and Claudius Ptolemy's own versions—

	Diatonic.			Chromatic.			Harmonic.		
Ancient.....	256	9	9	256	81	19	512	499	81
	$\frac{243}{243} \times \frac{8}{8} \times \frac{8}{8}$			$\frac{243}{243} \times \frac{76}{76} \times \frac{16}{16}$			$\frac{499}{499} \times \frac{486}{486} \times \frac{64}{64}$		
Soft .....	21	10	8	28	15	6			
	$\frac{20}{20} \times \frac{9}{9} \times \frac{7}{7}$			$\frac{27}{27} \times \frac{14}{14} \times \frac{5}{5}$					
Intense or syn- tonous.	16	9	10	22	12	7			
	$\frac{15}{15} \times \frac{8}{8} \times \frac{9}{9}$			$\frac{21}{21} \times \frac{11}{11} \times \frac{6}{6}$					
Tonic .....	28	8	9						
	$\frac{27}{27} \times \frac{7}{7} \times \frac{8}{8}$								
Equable .....	12	11	10						
	$\frac{11}{11} \times \frac{10}{10} \times \frac{9}{9}$								

and Ptolemy's harmonic .....

	46	24	5
	$\frac{45}{45} \times \frac{23}{23} \times \frac{4}{4}$		

In Sir John Hawkins' work some of these ratios are as here given; others are in the ratios of monochord strings, and therefore inversions of these numbers; but in all cases they amount to the same. The systems described by Aristoxenus, Euclid, and others are not in the form of ratios—they will be discussed later on.

Confining our attention at present to the diatonic systems, let us take the toniac of Ptolemy, which is attributed to Archytas. It may be very simply derived from the ditonic, thus :—

$$\text{Ditonic..... } \frac{256}{243} \times \frac{9}{8} \times \frac{9}{8} = \left( \frac{28}{27} \times \frac{64}{63} \right) \times \frac{9}{8} \times \frac{9}{8}$$

Combining the  $\frac{64}{63}$  with the adjacent- $\frac{9}{8}$ , we have at once  $\frac{28}{27} \times \frac{8}{7} \times \frac{9}{8}$ ,

and the system is

$$\begin{array}{ccccccccccccccc} A & \frac{9}{8} & B & \frac{28}{27} & C & \frac{8}{7} & D & \frac{9}{8} & E & \frac{28}{27} & F & \frac{8}{7} & G & \frac{9}{8} & A & \frac{28}{27} & B\flat & \frac{8}{7} & C & \frac{9}{8} & D \\ \hline & & \text{Hypaton} & & & & \text{Meson} & & & & \text{Synemmenon} & & & & & & & & & & \\ & B & \frac{28}{27} & C & \frac{8}{7} & D & \frac{9}{8} & E & \frac{28}{27} & F & \frac{8}{7} & G & \frac{9}{8} & A & & & & & & & \\ & \text{Diezeugmenon} & & & & & \text{Hyperboleon} & & & & & & & & & & & & & & \end{array}$$

In this system all the tetrachords are of the same type, which is not the case in all the diatonic systems; the D of the tetrachords synemmenon and diezeugmenon have *always* the same pitch, but the C of synemmenon is lower than the C of diezeugmenon by one vibration in 64 of the latter.

In all other strings of conjoined tetrachords, the respective notes are a perfect fourth apart, severally; and in disjoined tetrachords, they are in perfect fifths.

They form a very beautiful system, and have a brilliant leading note. The very large major third has a great resolving tendency, as have all compound intervals, but it has none of the discordance which it is often assumed the Greek thirds must have. It must be remembered that this is a diatonic system, not harmonic, and would be quite unsuited for a modern pianoforte or organ.

Let us now take the intense system of Ptolemy, having a tetrachord divided by  $\frac{16}{15} \times \frac{9}{8} \times \frac{10}{9}$ . We have for result :—

$$\begin{array}{ccccccccccccccc} A & \frac{9}{8} & B & \frac{16}{15} & C & \frac{9}{8} & D & \frac{10}{9} & E & \frac{16}{15} & F & \frac{9}{8} & G & \frac{10}{9} & A & \frac{16}{15} & B\flat & \frac{9}{8} & C & \frac{10}{9} & D \\ \hline & & \text{Hypaton} & & & & \text{Meson} & & & & \text{Synemmenon} & & & & & & & & & & \\ & B & \frac{16}{15} & C & \frac{10}{9} & D & \frac{9}{8} & E & \frac{16}{15} & F & \frac{9}{8} & G & \frac{10}{9} & A & & & & & & & \\ & \text{Diezeugmenon} & & & & & \text{Hyperboleon} & & & & & & & & & & & & & & \end{array}$$

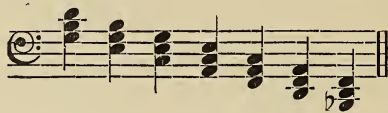
In this case the tetrachord diezeugmenon has its two upper intervals reversed, as the highest must be sesquioctave; and it becomes identical with the intense of Didymus. The C and D of the tetrachords synemmenon and diezeugmenon are of the same pitch, so the system could be tuned on the cythara of sixteen strings. The D of these tetrachords is a comma,  $\frac{81}{80}$ , lower in the scale than is D of the tetrachord hypaton; the two notes are not in octave.

It may be questioned whether the tetrachord hyperboleon should not be modified to maintain perfect fourths between its strings and the corresponding strings of the tetrachord diezeugmenon; I can find no valid reason for so doing, provided we do not skip from D to G, or *vice versa*, these notes being separated by a dissonant fourth,  $\frac{27}{20}$ .

The notes of the lower octave of this system, or from C to C, are the intervals of the scale now commonly known as true or untempered; on it the theorists of the Middle Ages, from Zarlino, Salinas, and others, to Rameau, Hauptmann, Helmholtz, and numerous contemporaries, tried to found a complete system of harmony; but if the ancients were right it will be seen how provincial is the modern conception; what a small portion of the field the moderns have explored.

Several modern theorists have concluded that the note D should have two values—one to make it consonant with G B, the other with F A; and this dual value is provided for in Ptolemy's system, the lower D being the "acute," the upper the "grave" supertonic.

The system provides no less than seven common chords in perfect consonance, which may be symbolised by the diagram of "Harmonic Position" of the late W. W. Parkinson in the following form:—



This diagram is intended to denote the root, third and fifth of each chord figured, in accurate consonant relation; and, also, that all the octaves of these notes are perfectly tuned.

There are thus two D's—one below, the other above the staff, which are separated by three fifths and a minor third, D-A-E-G-B, or two octaves and a comma.

This scheme shows the principal three triads of F and C major, and of A minor, the dominant of which requires the third sharpening however.

There is thus great wealth of consonance in this system, and but little resolving tendency, which arises chiefly from compound intervals. For pure, smooth harmony, it is admirably fitted, yet it was not considered as a "harmonic" scale, but a diatonic. This observation may be of use in determining wherein consisted the difference between the two genera.

The tritone, F B, and its inversion are much more intelligible and sonorous than are ours; the old system giving ratios divisible into two factors,  $\frac{5}{4} \times \frac{9}{8}$  and  $\frac{4}{3} \times \frac{16}{15}$  severally; whereas the tempered half octave requires three factors,  $\frac{8}{7} \times \frac{9}{8} \times \frac{11}{10}$ ; and cannot resolve on C by a super-particulate interval. (The error of this approximate value is less than one vibration in twenty thousand.)

The examples now given of diatonic scales show that as the highest interval of the tetrachord diezeugmenon must be sesquioctave, this tetrachord is unlike the others whenever they have not also a sesqui-

octave for their highest interval. Therefore, in all but the ditonic, toniac, and intense of Didymus, this tetrachord must be of a different type from the rest.

The reason of the enforced sesquioctave interval is that it may be joined to the tetrachord hyperboleon by its nete, and to synemmenon by its paranete, thus allowing of a passage from synemmenon to hyperboleon or the reverse. Such, it seems to me, is the reason of the peculiarity; and its name is probably derived from this *diverse yoking* which it possesses.

The equable system is very peculiar, with its very large "semitone," if it be fair to call it a semitone.

For it is almost impossible to say whether the three lowest notes, A  $\frac{9}{8}$  B  $\frac{12}{11}$  C are a major or a minor third, the interval formed,  $\frac{27}{22}$  being almost exactly half-way between  $\frac{6}{5}$  and  $\frac{5}{4}$ . For  $\frac{27}{22}$  exceeds  $\frac{6}{5}$  by  $\frac{45}{44}$ , and falls short of  $\frac{5}{4}$  by  $\frac{55}{54}$ ; and these ratios only differ by  $\frac{243}{242}$ , or less than the third of a comma.

The tetrachord diezeugmenon takes the form B  $\frac{12}{11}$  C  $\frac{88}{81}$  D  $\frac{9}{8}$  E.

The compound interval  $\frac{88}{81}$  is a defect which makes it unadvisable to write *in this tetrachord* the notes C D in succession, though the interpolation of a C $\sharp$  thus: C  $\frac{28}{27}$  C $\sharp$   $\frac{22}{21}$  D, would overcome the difficulty.

The upper nine notes of this system, excluding the B $\flat$  are, within very small limits of error, identical with the scale of the Highland bagpipe, as may be readily shown. Mr. Alexander John Ellis, with the aid of Mr. Hipkins, determined the vibrations of the bagpipe of Mr. Keene, of the staff of *Punch*, and here they appear compared with the Greek equable system:—

Mr. Keene's	G	A	B	C	D	E	F	G	A
bagpipe.....	395	441	494	537	587	662	722	790	882
Equable .....	396	440	495	540	587	660	720	792	880

Mr. Ellis remarks that C and G were slightly flat, and that the pitch could not be entirely depended on, as wind had to be got up in the bag for each note; moreover, no chanter is perfect.

This last remark I can corroborate; and the pitch, of the upper notes especially, depends greatly on the strength of the blast.

There is a singular phenomenon which, having been noticed by all who have heard this scale, I cannot think an illusion. When a cythara is tuned to this system, and airs played on the upper octave, the lowest string seems to drone its own note; nor does the impression disappear when the string is damped so that it cannot vibrate, though in this event it is barely audible.

The soft diatonic is a very beautiful system, and the only one which admits of perfect chromatic section, so far as I am able to discover.

The tetrachord diezeugmenon takes the form B  $\frac{21}{20}$  C  $\frac{640}{567}$  D  $\frac{9}{8}$  E; the



compound interval being presentable as  $\frac{9}{8} \times \frac{304}{303} \times \frac{32320}{32319}$ , or  $\frac{9}{8} \times \frac{301}{300}$  nearly.

But if the C diezeugmenon be tuned to the pitch of C synemmenon the tetrachord becomes the toniac, and this seems to be the best method of treatment.

The chromatic systems appear to have taken their rise through the chromatic division of the diatonic tones. This would necessarily be done on a second instrument, as the cythara had, at all events for a very long period, only the strings that have been named. The notes of the two systems would best fit in with each other thus :—

Diatonic	A	B	C	D	E	F	G	A	B $\flat$	
Chromatic		B	C $\sharp$	D	D $\sharp$		F $\sharp$	G	G $\sharp$	B

the proslambanomenos of the chromatic being of the same pitch as hypate hypaton of the diatonic. Thus we get chromatic tetrachords with a gap D $\sharp$  F $\sharp$ ; G $\sharp$  B, which should, if possible, be minor thirds,  $\frac{6}{5}$  or  $\frac{7}{6}$ , when the chromatic system becomes available as a principal part, instead of being merely an adjunct of the diatonic.

The “soft” systems of Ptolemy combine as shown below :—

Diatonic.				Chromatic.	
E		160		D <sup>#</sup>	150
D		140		D	140
				C <sup>#</sup>	135
C		126			
B		120		B	120
B $\frac{21}{20}$	C $\frac{15}{14}$	C <sup>#</sup> $\frac{28}{27}$	D $\frac{15}{14}$	D <sup>#</sup> $\frac{16}{15}$	E.

The toniac diatonic does not admit of an accurate chromatic system with a true gap, but there is a curious relation between it and the “soft” system :—

The soft Diatonic	B	C	D	E	F	
and its Chromatics	B	C $\sharp$	D	D $\sharp$	F $\sharp$	
are equivalent to						
the Tonic	B	C $\sharp$	D	E	F $\sharp$	
and its Chromatics		C		D $\sharp$	E	F

so the full series of notes may be regarded in either light. We thus can divide the tetrachord diezeugmenon, which in the soft system has become toniac.

When the section is perfect it is mainly a matter of orthography whether we call the chromatics flats or sharps, as they are truly related to the notes on both sides of them.

For the full understanding of the older chromatic systems I think it necessary to enter somewhat minutely into their theory, or what I take to be such.

If we make a series of twelve ascending fourths—

$A\sharp - D\flat - G\sharp - C\sharp - F\sharp - B - E - A - D - G - C - F - B\flat$ ,

the result will be five octaves, *less* a small interval called the Pythagorean comma, very nearly equal to  $\frac{74^*}{73}$ . Consequently, the octave duplicates

of  $A\sharp$  and  $B\flat$  are so nearly identical that to use both would be useless, and all further terms of the series would give mere duplicates of the former. Therefore we may cross out  $A\sharp$ , and consider only the eleven remaining fourths. We may, if more convenient for our notation, cross out  $D\flat$  and  $G\sharp$ , adding at the other end  $E\flat$  and  $A\flat$ . Moreover, the last note of our series cannot be made the lowest note of a tetrachord, as that would entail notes which we have agreed to exclude. Or, we may make use of all which naturally present themselves, afterwards excluding or substituting as seems judicious.

If we form these notes into a scale, what we should call "semitones" are either limmas or hemitones, as Nicomachus calls them, and it is well to clear up the question by what right we make use of them.

The limma is accurately  $\frac{20}{19}$   $\frac{1216}{1215}$ , and the hemitone  $\frac{16}{15}$   $\frac{945}{944}$   $\frac{14337}{14336}$

or *about*  $\frac{16}{15}$   $\frac{886}{885}$ . As the highest note of the cythara only makes some 500 vibrations per second, these small errors are quite negligible, and the ratios may be considered as  $\frac{20}{19}$  and  $\frac{16}{15}$  severally.

For the accommodation of all twelve notes in one octave, two instruments must be used, and it turns out simpler to give to the primary the chromatic form of the tetrachord. We can make the following combination:—

A	A $\flat$
G $\flat$	G
F	
E	E $\flat$
D $\flat$	D
C	
B	B $\flat$
D	A
C $\flat$	C
B $\flat$	
A	A $\flat$
G $\flat$	G
F	
E	E $\flat$
D $\flat$	D
C	
B	B $\flat$
A	A

For the sake of completeness,  $A\flat$  is added at the top of the second series instead of at the bottom, where it would be a kind of proslambanomenos.

In the chromatic the tetrachords proceed by two limmas and a trihemitone

On the second instrument the third strings of each tetrachord are left blank, as there are no new notes of the chromatic scale to place there.

This series, therefore, has tetrachords with one division only—limma and ditone.

But the steps from one instrument to the other are hemitones, and the two cytharas are *in consonant harmony*. For the hemitone implies a consonant major third, and these are not hard to find. The interval  $B\flat B$  is equivalent to  $A\sharp B$  on the consonant, intense scale of Ptolemy; not the Pythagorean  $A\sharp B$ ; so, in order to distinguish the two, let us write the first in brackets, so that ( $A\sharp$ ) is the same note as the Pythagorean  $B\flat$ .

\* Equal to  $\frac{223}{220}$  with an error of less than one vibration in 146,000.

The series thus  
becomes :—

A	(G $\sharp$ )
(F $\sharp$ )	G
E	(D $\sharp$ )
(C $\sharp$ )	D
C	B
B	(A $\sharp$ )
D	A
(B)	C
(A $\sharp$ )	A
A	(G $\sharp$ )
(F $\sharp$ )	G
F	E
E	(D $\sharp$ )
(C $\sharp$ )	D
C	B
B	(A $\sharp$ )
A	A

Any major or minor triad containing one or two of the chromatically sharpened notes is in a state of consonance indistinguishable from perfect purity.

But chords formed from the plain notes have a dissonant major and minor third ; considerably more so than has our present tempered scale, and therefore should be resolved, if not also prepared.

The second series is a *form* of the long-lost “harmonic” genus, in its most imperfect state ; but in order to verify it by means of its ratios, it must not be yet dismissed. The string of each tetrachord lying idle was used to divide the limma, producing a neutral third between the major and minor thirds, as shown in the diagram here following :—

Fourth string . . . . . D

Idle string . . . . .

Second string . . . . . (A $\sharp$ )

. . . . . A (half sharp)

First string . . . . . A

Thus the steps, ascending in order of pitch, are A, half limma A $\sharp$ , half limma (A $\sharp$ ), ditone D.

The most equable division of the limma would be to resolve it into two fractions whose terms have the same difference as the terms of the limma have, thirteen ; and this gives the following ratios :—

$$\frac{512}{499} \quad \frac{499}{486} \quad \frac{81}{64}$$

which are the figures of Claudius Ptolemy.

Eratosthenes, considering the limma as  $\frac{20}{19}$ , divides the tetrachord into  $\frac{40}{39}$ ,  $\frac{39}{38}$ ,  $\frac{19}{15}$ .

The two limmas of the chromatic together differ from  $\frac{10}{9}$  by only about one vibration in 885, so the gaps are indistinguishable from con-

sonant minor thirds; and Eratosthenes is justified in considering the tetrachord theoretically to be  $\frac{20}{19}, \frac{19}{18}, \frac{6}{5}$ .

This harmonic system has the defect of a compound major third, which cannot be properly taken by step; an improvement is effected by using the Pythagorean sharpened notes in place of those in brackets, thus raising them a Pythagorean comma. The tetrachord B C (C $\sharp$ ) E thus becomes B C C $\sharp$  E, and C C $\sharp$  is a hemitone, not a limma as before. Meanwhile, the harmonic becomes A A $\sharp$  D, hemitone and consonant major third. But, in order to obtain accuracy, the tuning of this A $\sharp$  should not be *quite* Pythagorean; the small fractions of the hemitone should be cleared away, to give the best possible harmonic tetrachord, A  $\frac{16}{15}$  A $\sharp$   $\frac{5}{4}$  D.

In the chromatic the case is somewhat different, we do not so much want C $\sharp$  to be a hemitone from C as to resolve accurately on D.

Now C D is  $\frac{9}{8}$ ; if from this we take  $\frac{16}{15}$ , the remainder is the interval

$$\frac{9}{8} \frac{15}{16} = \frac{135}{128} = \frac{19}{18} \frac{1215}{1216}$$

Therefore if we make C  $\frac{16}{15}$  C $\sharp$ , C $\sharp$  D is  $\frac{19}{18} \frac{1215}{1216}$ ; but if we make

$$C C\sharp \frac{16}{15} \frac{1215}{1216}, \text{ then } C\sharp D \text{ is } \frac{19}{18}$$

But this first interval is equal to  $\frac{81}{76}$  leaving for C $\sharp$  E  $\frac{19}{16}$ .

Thus we get the ancient chromatic of Claudius Ptolemy;

$$B \frac{256}{243} C \frac{81}{76} C\sharp \frac{19}{16} E.$$

The division of the semitone,  $\frac{16}{15}$ , of the harmonic, can be done in ten different pairs of factors; or, counting the transposition of these, twenty in all. But the divisions are in some cases so unequally matched that one component would be all but inaudible; the three preserved from antiquity are:—

$$\text{Archytas } \frac{28}{27} \frac{36}{35}, \text{ Didymus } \frac{32}{31} \frac{31}{30}, \text{ Claudius Ptolemy } \frac{46}{45} \frac{24}{23}.$$

In all these systems the ditone is the *incomposite*,  $\frac{5}{4}$ .

These perfected harmonic systems, unless I mistake, are in accurate tune with *any* accurate chromatic, or even diatonic; for the dissonant thirds of the latter are all prepared and resolved; or can be used as passing notes. But the tables of Alypius seem to show that when the chromatic was changed to the diatonic, a modification was made in the harmonic, to supply the now missing chromatic, so the conflict of the two notes in question could not take place; these changes are yet obscure, but they did not consist of a mere interchange of notes on the



two instruments. Thus there are two forms of the harmonic, one for use with the diatonic, the other with the chromatic; and both forms vary from mode to mode (terms which have to be explained), so that the further consideration of these intricacies must be postponed.

The harmonic tetrachord once established by Archytas as having its semitone accurately  $\frac{16}{15}$ , it may be considered as a diatonic whose intervals fit into the gap of the chromatic after the manner of Claudius Ptolemy's "soft" system, but having the middle of these three parts always equal to  $\frac{16}{15}$ , as shown in the first two lines of the following diagram:—

Harmonic } as diatonic }	$\overbrace{\begin{array}{ccccccc} E & \frac{13}{15} & F & & (G) & & A \end{array}}$							
Chromatic ...	$C\sharp$	D	$D\sharp$	...		$F\sharp$	G	$G\sharp$
Tonic ratios.	$C\sharp$	$\frac{28}{27}$ D		$\frac{9}{8}$ E		$\frac{8}{7}$ $F\sharp$		
Tonic.....			$D\sharp$ $\frac{28}{27}$	E	$\frac{8}{7}$	$F\sharp$	$\frac{9}{8}$	$G\sharp$

Having invented the tonic tetrachord, Archytas would probably try to resolve this system into two such tetrachords, as here shown. If  $E F\sharp$  be thus made  $\frac{8}{7}$ , and  $E F$   $\frac{16}{15}$ , then  $F F\sharp$  is  $\frac{15}{14}$ , and the step is correct;

$D\sharp$  being placed  $\frac{28}{27}$  below E,  $D D\sharp$  necessarily becomes  $\frac{243}{224}$ , and the gap  $\frac{32}{27}$ .

$$C\sharp \frac{28}{27} \quad D \frac{243}{224} \quad D\sharp \frac{32}{27} \quad F\sharp$$

The step  $\frac{243}{224}$  is equal to  $\frac{13}{12} \times \frac{729}{728}$ , a more imperfect interval than the other approximately correct steps which we have had to consider, but the error is less than the ninth of a comma.

The compound gap of the chromatic shows that it was not intended to be taken by leap. With a natural pride, we may well suppose, in his new interval, Archytas divided the harmonic  $\frac{16}{15}$  into  $\frac{28}{27} \times \frac{36}{35}$ , as already stated.

This complete system of Archytas, like all that contain the limma, is a modification of two ditonic systems, one pitched a third above the other. Such an arrangement would be very intricate to play, and there would be duplicate notes which could be diverted to other uses.

Even with the transposition of notes for the purpose of simplification, the chromatic and harmonic compound system must have been

much more intricate in performance than the plain diatonic, and for this reason they fell into disuse, and have never been revived.

The intense or syntonous diatonic system of Ptolemy does not admit of a correct chromatic division with a gap of a consonant third,  $\frac{6}{5}$ . But with a chromatic scale whose gap is  $\frac{7}{6}$ , a very curious combination may be effected, thus—

$$\begin{array}{l} \text{Diatonic} \dots\dots\dots B \frac{16}{15} C \frac{9}{8} D \frac{10}{9} E \quad F \\ \text{Chromatic} \dots\dots\dots C\sharp \frac{22}{21} D\flat \frac{13}{11} E\flat \frac{7}{6} F\sharp \end{array}$$

where  $C\sharp$  is pitched with relation to C as in the modern acute chromatic of Hauptmann, a comma more than a chromatic semitone, or  $\frac{135}{128} = \frac{19}{18} \frac{1215}{1216}$ . This gives a chromatic  $D\flat$  lower than the diatonic, so that the entire division becomes—

$$\begin{array}{ccccccc} B \frac{16}{15} & C \frac{19}{18} & \frac{1215}{1216} & C\sharp \frac{22}{21} & D\flat \frac{56}{55} & D \frac{15}{14} & E\flat \frac{28}{27} \\ & & & \vdots & & \vdots & \\ & & & C\sharp \dots\dots\dots 16 \dots\dots\dots D & & & \\ & & & \vdots & & \vdots & \\ & & & D \dots\dots\dots 8 \dots\dots\dots E2 & & & \end{array}$$

Thus the semitone  $C\sharp \frac{16}{15} D$  is divided, much as in the harmonic, by the ratios  $\frac{22}{21}$ ,  $\frac{56}{55}$ . The accurate correspondence of the two systems can leave but little doubt that for this reason only was the strange-looking tetrachord, containing no “syntones,” called the syntonous. Sir J. Hawkins says that Ptolemy “resembles the tetrachord to œconomics,” for what reason I cannot conjecture.

Some writers have denoted the systems by a different method, not explicitly involving the principle of superparticulate ratios, but seeming really to amount to the same thing. Such are Aristoxenus, Aristides Quintilianus, Euclid and Vitruvius, who have left the following figures :—

Acute ...	48	44	42	36	30	24
Mean ...	6	8	9	12	18	24
Grave ...	6	8	9	12	12	12
	60	60	60	60	60	60
	Harmonic.	Chromatic soft.	Chromatic sesquialteral or hemiolian.	Chromatic tonic.	Diatonic soft.	Diatonic intense.

The usually accepted interpretation of this table is that voiced by Dr. Wallis, who, dealing with the halves of these numbers, says: "In order to understand this scheme we must suppose the tetrachord divided into thirty equal parts. . . ." Here is a fatal, though very natural, error. Imagine Euclid, who says that harmony originates in super-particulars, who says that a superparticular has no half, dividing  $\frac{4}{3}$  into thirty *equal* parts! The true meaning of the table has reference to the monochord: If from a monochord string we cut off a fourth part, we have raised the pitch a fourth; and it is this part so cut off that is to be divided into sixty equal portions, and passed through from below upwards, giving the ratios  $\frac{240}{239}$ ,  $\frac{239}{238}$  . . .  $\frac{181}{180}$  for the intervals passed through.

Thus the first group of six, in the harmonic, gives  $\frac{240}{234}$  or  $\frac{40}{39}$ ; the next,  $\frac{234}{228}$  or  $\frac{39}{38}$ ; the last  $\frac{228}{180}$  or  $\frac{19}{15}$ ; and the tetrachord is the harmonic of Eratosthenes.

The tonic chromatic, in like manner, is  $\frac{240}{228}$   $\frac{228}{216}$   $\frac{216}{180}$ ; or  $\frac{20}{19}$   $\frac{19}{18}$   $\frac{6}{5}$ ; the chromatic of Eratosthenes.

The intense diatonic becomes  $\frac{20}{19}$   $\frac{19}{17}$   $\frac{17}{15}$ , which, it is interesting to note, is the natural outcome of substituting  $\frac{20}{19}$  for the limma in the ditonic system. For the remaining ditone will not now divide into two factors of  $\frac{9}{8}$ , as it has become  $\frac{19}{15}$  which will only divide into  $\frac{19}{18} \times \frac{6}{5}$  or  $\frac{76}{75} \times \frac{5}{4}$ , neither of which is suitable for a *diatonic* scale. The compound interval is therefore divided equably, as was the limma of the ancient harmonic. Besides these "old friends with new faces," there are the three—

Soft chromatic .....	$\frac{30}{29}$	$\frac{29}{28}$	$\frac{56}{45}$
Sesquialteral do.....	$\frac{80}{77}$	$\frac{77}{74}$	$\frac{37}{30}$
Soft diatonic .....	$\frac{20}{19}$	$\frac{38}{35}$	$\frac{7}{6}$

whose precise function I have not completely ascertained.

If it be true that the Aristoxinean school depended entirely on the ear for their ratios, their acceptance of these compound intervals is not surprising, for  $\frac{38}{35} = \frac{13}{12} \frac{456}{455}$ ;  $\frac{80}{77} = \frac{26}{25} \frac{1000}{1001}$ ;  $\frac{77}{74} = \frac{26}{25} \frac{1925}{1924}$ ; and the chromatic gaps,  $\frac{56}{45}$ ,  $\frac{37}{30}$ , are not necessarily superparticulate, as they are filled in with two divisions. Now, the small terms of the above compound intervals are within the probable limits of error of a monochord, and would easily escape detection.

I have now given an account, true or erroneous, of every tetrachord of the list, and also of the genera into which the Greeks divided their music.

The method I have advanced was feasible, and always will be; moreover, the systems are full of variety and beauty when tested practically. At least, I have been able to verify this to a very large degree, and have no doubt concerning the remainder. Each reader must form his own conclusion; I maintain that the principles of the Alexandrian philosophers were mainly true, and that the surmises on which the Greek music has been so generally condemned are entirely mistaken conjectures.

Some account, though imperfect, should be given of the "modes," which must not be confounded with the similarly named ecclesiastical modes of later date. Although the cythara scale comprised two octaves, few songs contained more than one; and therefore the octave which is in principal use should be taken as the basis of the tuning for that particular piece. Thus, omitting the lowest A, proslambanomenos, we can choose as principal octave B to B, C to C, and so on, up to A mese to A nete hyperboleon—seven in all. These are the only "modes" considered useful, natural, and therefore legitimate, by Claudius Ptolemy, who considers all others as duplicates of these in a somewhat higher or lower pitch.

The seven octaves just mentioned are all divided in different ways, that ascending from B runs in the order  $\overbrace{B C D E F G} \quad A B$  two tetra-

chords conjoined, and the diazeutic interval at the top;  $\overbrace{C D E F} \quad \overbrace{G A B C}$ , two disjoined tetrachords inverted in the order of their division, the semitone of each being at the top; and so on with the rest; thus we get the intervals of the tetrachords in all permutations and the diazeutic interval varying in position from mode to mode.

Taking the second of these examples, the original tuning *may* not make C G a perfect fifth. In this case the G will require re-tuning,



otherwise G C will not be a fourth. This is the whole secret of modal tuning, *not* the raising or depressing of notes by a whole semitone. The tables of Alypius show the semitones to occur between the same strings throughout the modes; and the ditonic scale, having every fourth and fifth perfect, required no modal tuning. It was therefore the *immutable* system, in tune for all the modes.

In the naming of the modes great misunderstanding has arisen from the use of the terms hyper and hypo. The lowest strings of the cythara were the longest, the tallest, and their sounds were called the highest; the terms high and low being completely inverted, so that hyper denoted the graver, hypo the higher modes. These, as derived by Claudius Ptolemy, may be shown by the following divided octaves:—

	Dorian.	Hyperdorian or Mixolydian.	Hypodorian or Hypophrygian.	Æolian or Lydian.	Hypolydian or Hypoæolian.	Hypodorian.	Phrygian.
Nete hyp. ....						A	
Paranete .....			G			G	
Trite .....			F		F	F	
Nete diez. ....	E		E		E	E	
Paranete .....	D		D		D	D	D
Trite .....	C		C	C	C	C	C
Paramese .....	B	B	B	B	B	B	B
Trite syn. ....	B <sup>♭</sup>	B <sup>♭</sup>	B <sup>♭</sup>	B <sup>♭</sup>	B <sup>♭</sup>	B <sup>♭</sup>	B <sup>♭</sup>
Mese .....	A	A	A	A	A	A	A
Lichanos meson..	G	G	G	G	G		G
Parhypate.....	F	F		F	F		F
Hypate .....	E	E		E			E
Lichanos hyp. ...		D		D			D
Parhypate .....		C		C			
Hypate .....		B					
Proslamb. ....							
Column of Alypius	13	15	11	4	5	14	7

Thus mese, A, became in the

Mixolydian	Paranete diezeugmenon	} of the mode.
Lydian	Trite                    "	
Phrygian	Paramese	
Dorian	Mese	
Hypolydian	Lichanos meson	
Hypophrygian	Parhypate           "	
Hypodorian	Hypate               "	

This version of the modes is not the one usually accepted, but it is conformable to Alypius, to Plutarch's account of the Mixolydian, and an alternative reading of which Ptolemy's account is capable. Authors have been misled by the hypo and hyper in these and other names of the modes, and have inverted the whole arrangement.

The musical notation employed by Alypius, and in the few fragments of songs which have reached us, was derived from the letters of the Greek alphabet. The scheme cannot be understood without a few preliminary theoretical observations.

There is a remarkable division of the octave into twenty-one parts, these parts being approximately equal. For we can thus divide a fifth :—

$$\frac{3}{2} = \frac{12 \times 3}{12 \times 2} = \frac{36}{24}$$

Four parts = a tone  $\frac{9}{8}$

Eight parts = a fourth  $\frac{4}{3}$

$$= \frac{\overbrace{36 \quad 35 \quad 34 \quad 33} \quad \overbrace{32 \quad 31 \quad 30 \quad 29 \quad 28 \quad 27 \quad 26 \quad 25}}{\underbrace{35 \quad 34 \quad 33 \quad 32 \quad 31 \quad 30 \quad 29 \quad 28 \quad 27 \quad 26 \quad 25 \quad 24}}$$

Nine parts = a fourth  $\frac{4}{3}$

Three parts = a tone  $\frac{9}{8}$

Thus a fifth can be divided into twelve parts, a fourth into eight or nine, and a tone into four or three at one and the same operation. Moreover the greatest and least of these divisions do not differ by so much as a Pythagorean comma, for

$$\frac{25}{24} \div \frac{36}{35} = \frac{875}{864} = \frac{80}{79} \times \frac{13825}{13824}$$

Thus a tetrachord and a tone are twelve parts, and the remaining tetrachord nine, making twenty-one for the octave.

To denote twenty-one intervals twenty-one letters of the Greek alphabet are used, the  $\pi$ ,  $\rho$ , and  $\sigma$  of the upper octave being omitted. This brings into octavism any letter previous to  $\pi$ , and the lower note of the same name. The upper  $\tau$ ,  $\nu$ ,  $\phi$  . . . to  $\omega$  were inverted (or, in the case of  $\phi$ , laid on its side) for distinction.

It is more convenient, for typographical purposes, to use a (!) after the letter for this object. When the main octave of the mode, consist-

ing of plain letters, is gone through, the  $\pi$ ,  $\rho$ , and  $\sigma$  are not omitted; but on recommencing a third octave, the letters are mutilated or distorted. This we will denote by an inverted note of exclamation (!). The Dorian mode ends, naturally enough, with  $\omega$  on hypate meson, having  $\pi$  for mese; giving the first column of the following table of Ptolemy's modes, which I have compiled for comparison with the facsimile of the tables of Alypius:—

	Dorian.	Mixolydian.	Hypolydian.	Lydian.	Hypodorian.	Phrygian.	Hypophrygian.
Nete hyp. ....	$\tau$ !	$\eta$ !	$\chi$ !	$\kappa$ !	$\gamma$	$\mu$ !	$\omega$ !
Paranete .....	$\chi$ !	$\kappa$ !	$\alpha$	$\omicron$ !	$\eta$	$\tau$ !	$\gamma$
Trite .....	$\beta$	$\omicron$ !	$\zeta$	$\phi$ !	$\lambda$	$\psi$ !	$\theta$
Nete diez. ....	$\gamma$	$\tau$ !	$\eta$	$\chi$ !	$\mu$	$\omega$ !	$\iota$
Paranete .....	$\eta$	$\chi$ !	$\kappa$	$\alpha$	$\pi$	$\gamma$	$\mu$
Trite .....	$\lambda$	$\beta$	$\omicron$	$\zeta$	$\upsilon$	$\theta$	$\rho$
Paramese .....	$\mu$	$\gamma$	$\pi$	$\eta$	$\phi$	$\iota$	$\sigma$
Nete syn. ....	$\eta$	$\chi$ !	$\kappa$	$\alpha$	$\pi$	$\gamma$	$\mu$
Paranete .....	$\kappa$	$\alpha$	$\omicron$	$\zeta$	$\tau$	$\eta$	$\pi$
Trite .....	$\omicron$	$\zeta$	$\sigma$	$\iota$	$\psi$	$\lambda$	$\upsilon$
Mese .....	$\pi$	$\eta$	$\tau$	$\kappa$	$\omega$	$\mu$	$\phi$
Meson diat. ....	$\tau$	$\kappa$	$\chi$	$\omicron$	$\delta$	$\pi$	$\omega$
Parhypate.....	$\psi$	$\omicron$	$\gamma$	$\sigma$	$\theta$	$\upsilon$	$\epsilon$
Hypate meson ...	$\omega$	$\pi$	$\delta$	$\tau$	$\iota$	$\phi$	$\zeta$
Hyp. diat. ....	$\delta$	$\tau$	$\eta$	$\chi$	$\nu$	$\omega$	$\iota$
Parhypate.....	$\theta$	$\psi$	$\mu$	$\gamma$	$\rho$	$\epsilon$	$\xi$
Hyp. hyp. ....	$\iota$	$\omega$	$\nu$	$\delta$	$\sigma$	$\zeta$	$\omicron$
Proslamb. ....	$\nu$	$\delta$	$\pi$	$\eta$	$\theta$	$\iota$	$\sigma$

The Dorian tetrachord hyperboleon begins with  $\tau$  ! and has eight intervals to  $\gamma$ , leaving  $\gamma$  to  $\mu$ , nine, for diezeugmenon, the upper interval,  $\gamma$   $\eta$  being a sesquioctave tone divided into four parts. From paramese,  $\mu$ , to mese,  $\pi$ , there are four more divisions for the diazeutic interval. The lower octave is divided like those just mentioned, and synemmenon,  $\eta$  to  $\pi$ , has nine intervals.

The interior intervals of the tetrachords will vary in magnitude according to the species—toniac, soft, syntonous, etc.—and so must be looked on as symbolising any diatonic tetrachordal intervals, subject to the reservation that  $\gamma$   $\eta$  must be sesquioctave.

As the letters shift their position from mode to mode, they will change in name and arrangement; for example, when the mode changes by the fall of a fourth, or rise of a fifth, in the modal mese, paramese disappears, as it is not a fourth above any other note of the system. Thus  $\pi$ , paramese of the hypolydian, disappears in the Lydian.

To make still clearer the doctrine of the modes, let us suppose that on a pianoforte we agree always to call the white keys diatonic and the black chromatic, whatever key we play in. Let the instrument be tuned to an untempered *chromatic* scale, say of E, in the first place, and then retuned for the scale of B♭. Then some of the white keys have undergone alteration, which is the change of the diatonic from the mode of E to the mode of B♭. In like manner, any change made in the black notes is the modal change of the chromatic. Again, in passing from the key of seven flats through the intermediaries to seven sharps, fifteen in all, the same note becomes in turn C♯, B, and A##; so in passing through the fifteen modes of Alypius do the letter names move through two places.

TABLE OF GREEK MUSICAL CHARACTERS.

DIATONIC.

Notes of Character παιδιά θεοφίλων παιδιά θεοφίλων	Character Tone Lyric	Character Tone Lyric	Character Tone Lyric	Character Tone Lyric	Character Tone Lyric	Character Tone Lyric	Character Tone Lyric	Character Tone Lyric	Character Tone Lyric	Character Tone Lyric	Character Tone Lyric	Character Tone Lyric	Character Tone Lyric	Character Tone Lyric	Character Tone Lyric
Νῆρη ὑπερβολῶν	1 λ	θ ν	υ ζ	κ ς	β ε	α ι	μ η	υ ζ	γ ι	ο κ	α ι	3 ε	ι λ	γ ι	κ λ
ὑπερβολῶν διατονός	μ η	υ ζ	γ ι	ο κ	α ι	3 ε	ι λ	γ ι	ο κ	α ι	3 ε	ι λ	γ ι	ο κ	α ι
Πῆρη ὑπερβολῶν	λ ς	ε υ	θ ν	υ ζ	κ ς	β ε	α ι	μ η	υ ζ	γ ι	ο κ	α ι	3 ε	ι λ	γ ι
Νῆρη διεξευκμενῶν	θ η	3 ε	ι λ	κ λ	μ η	υ ζ	γ ι	ο κ	α ι	3 ε	ι λ	γ ι	ο κ	α ι	3 ε
Διεξευκμενῶν διατονός	υ ζ	ι λ	μ η	υ ζ	κ ς	β ε	α ι	μ η	υ ζ	γ ι	ο κ	α ι	3 ε	ι λ	γ ι
Πῆρη διεξευκμενῶν	ε υ	ε υ	π λ	3 ε	ο κ	α ι	μ η	υ ζ	γ ι	ο κ	α ι	3 ε	ι λ	γ ι	ο κ
Παραμετῶν	3 ε	ο κ	α ι	μ η	υ ζ	κ ς	β ε	α ι	μ η	υ ζ	γ ι	ο κ	α ι	3 ε	ι λ
Νῆρη συνημμενῶν	υ ζ	ι λ	μ η	υ ζ	κ ς	β ε	α ι	μ η	υ ζ	γ ι	ο κ	α ι	3 ε	ι λ	γ ι
Συνημμενῶν διατονός	γ ι	ο κ	α ι	μ η	υ ζ	κ ς	β ε	α ι	μ η	υ ζ	γ ι	ο κ	α ι	3 ε	ι λ
Πῆρη συνημμενῶν	θ λ	γ ι	ο κ	α ι	μ η	υ ζ	κ ς	β ε	α ι	μ η	υ ζ	γ ι	ο κ	α ι	3 ε
Μεσῶν	ι λ	γ ι	ο κ	α ι	μ η	υ ζ	κ ς	β ε	α ι	μ η	υ ζ	γ ι	ο κ	α ι	3 ε
Μεσῶν διατονός	μ η	υ ζ	γ ι	ο κ	α ι	μ η	υ ζ	κ ς	β ε	α ι	μ η	υ ζ	γ ι	ο κ	α ι
Παραπληρῶν	β υ	β λ	θ λ	κ λ	μ η	υ ζ	κ ς	β ε	α ι	μ η	υ ζ	γ ι	ο κ	α ι	3 ε
Ἰσάτων μέσων	κ λ	μ η	υ ζ	κ ς	β ε	α ι	μ η	υ ζ	γ ι	ο κ	α ι	3 ε	ι λ	γ ι	ο κ
Ἰσάτων διατονός	φ ε	3 ε	ι λ	κ λ	μ η	υ ζ	κ ς	β ε	α ι	μ η	υ ζ	γ ι	ο κ	α ι	3 ε
Παραπληρῶν ὑπ᾿ ἱσάτων	ρ λ	β λ	θ λ	κ λ	μ η	υ ζ	κ ς	β ε	α ι	μ η	υ ζ	γ ι	ο κ	α ι	3 ε
Ἰσάτων ὑπ᾿ ἱσάτων	γ ι	ο κ	α ι	μ η	υ ζ	κ ς	β ε	α ι	μ η	υ ζ	γ ι	ο κ	α ι	3 ε	ι λ
Προσλαμψανόμενος	3 ε	ο κ	α ι	μ η	υ ζ	κ ς	β ε	α ι	μ η	υ ζ	γ ι	ο κ	α ι	3 ε	ι λ





ξ corrected to ι; . The three top notes of the fifth diatonic should run χ! α ξ; and in the corresponding chromatic η and ν have been both written as ν reversed.

Bearing these corrections in mind, the first column of each mode of each table is readily legible. They show that instead of being a number of arbitrary signs, they were constructed on a highly organised system, so much so that we might well doubt whether they constituted the common notation of musicians, or represented philosophic speculation merely. Fragments of manuscripts have been found consisting of verses with these musical characters written over them; they were therefore the notation in actual use by singers and instrumentalists, not the musical algebra of the learned.

The second columns of these modes I cannot at present explain, further than to remark that they are largely the harmonic genus accompanying the other. Kircher is responsible for the legends "vox," "instrumentum" which head the columns, but the opinion that they are merely vocal and instrumental notations of the same sound is simply incredible. To maintain, for example, that in the Lydian diatonic the notes A, B<sub>2</sub> were written for the voice ι and θ, but for the instrument both denoted by a turned λ, is past belief.

This review of the musical theory of ancient Greece seems to show plainly the development of their doctrine. First is Pythagoras, who deduces all his notes from a string of fourths; the lower duplicates of which form the divisions of his tetrachords. The inner notes of each tetrachord have no explicit relation to the bounding notes, but simply happen to fall there as lower octaves of subsequent fourths.

If this theory were correct, there could be but one diatonic system, which common usage proved to be not the case. Hence the complaint that the Pythagoreans allowed the ear no part in the determination of musical intervals, insisting that reason alone can decide between the true and the false.

Aristoxenus and his followers, by comparing the sounds of accepted systems with the monochord divisions, concluded that they were derivable from an equable series of superparticulates, corresponding to equal divisions of the monochord string passed through in going from a note to its fourth. But this stipulation of *equable* superparticulates prevented them from rationally interpreting all the facts; and the true theory was, as far as I know, completed by Claudius Ptolemy, by his acceptance of the principle of superparticulates in its most general form. For his ratios will not always reduce to the Aristoxinean form; his harmonic tetrachord, for example,  $\frac{46}{45} \frac{24}{23} \frac{5}{4}$  requiring a section not of thirty or sixty parts, but some multiple of 92. And if 92, where is the limit to be placed? And if there be no limit, the restriction is useless, and should be abandoned.

There is nothing gained by saying, as the Aristoxineans might have said: Divide the tetrachord into 92 equable parts, and take thereof 8, 15, and 69.

The Aristoxinean restriction has the same fettering effect as has the most modern theory of overtones, which insists on every note being an overtone of the key-note, but allows change of key. For if we take a

certain note, say B, and call it the eleventh overtone of *some* key-note, we may then go to overtone twelve, making  $B\frac{12}{11}$  C.

Let us now modulate, making C the overtone ten of some other "root," and progress to D, overtone eleven. This gives  $B\frac{12}{11}$   $C\frac{11}{10}$  D.

Lastly, make D overtone nine of a third root, and progress to overtone ten, and we have the "equable" tetrachord  $B\frac{12}{11}$   $C\frac{11}{10}$   $D\frac{10}{9}$  E. And so can be "explained" any other tetrachord, which is tantamount to explaining nothing. The overtonist can only demur at this constant modulation on the ground that it is excessive; but there is the tetrachord which has stood for twenty centuries, and the overtone theory is bound to explain it, or own itself beaten.

There are some who consider discussion of the ancient systems as mere talk about trifles imperceptible to the ear, but an actual trial on a well-tuned cythara shows that this is not the case. Each system has its peculiar character, corresponding to what is called the "complexion" of keys, but in an enhanced degree; the chromatic systems, which cannot be judged from trial on a tempered scale, are full of charm. A simple, unaccompanied melody seems hardly to require harmonies for its interpretation, so pure and accurate do the scale-steps sound. And these varied and excellent effects are the outcome of a theory so simple that a line or two of type suffices for its enunciation!

To the most abstruse questions of modern tempered music, which cannot be dealt with by any other theory, the Ptolemaic gives definite answers, which are accurate as far as the ear can judge; and it seems to me that all the valid rules of the most modern theorist easily follow from the same principles, when applied to the present tempered scale. To show this would exceed the scope of the present article, but I would invite earnest attention and study to the principles discovered in the writings of the world's greatest musical theorist, Claudius Ptolemy, of Alexandria.

JOSEPH THOMSON, AFRICAN EXPLORER. A Biography. By his BROTHER (Rev. J. B. THOMSON, Greenock). With Contributions by Friends. 358 pages. Six Maps, Portrait, twenty Illustrations, and Index. London: Sampson Low and Co., 1896.

THIS is a touching, brotherly tribute to the memory of our member, and one we were always delighted to have the opportunity of hearing.

This short biography brings out very clearly the preparation of this explorer for his work, his skilful handling of the first caravan left on his hands by the death of his lamented leader Keith Johnston, the indomitable courage with which he faced difficulties in East Africa, on the Lakes, in Morocco, or in the Niger territory.

The statement of his treaty making is at this time rather startling, and one cannot help but wonder what he would have thought of recent arrangements (1898).

Looking at the portrait one can, in fancy, hear the dry little laugh whilst his cheery voice related some amusing incident in his travels.

He was undoubtedly the successor of Livingstone—at least in this, that no native lost his life (except by accident) in consequence of his journeys.

His life, although short in years, filled a great span in area, and in thinking of the East Central African domain we cannot forget him, but hold him in our greatest regard.

The book is very interestingly written, and our only regret is that more was not given.

## *PROCEEDINGS OF THE SOCIETY.*

JANUARY 1ST TO MARCH 31ST, 1898.

---

The 453rd Meeting of the Society was held in the Coal Exchange, on Saturday, January 8th, 1898, at 5 o'clock, being the occasion of the Children's Party.

Several Victorians received the children, and valuable assistance was given by a number of ladies and gentlemen.

The music, dances, and games were taken charge of by Mr. J. D. Wilde and a party of musicians.

Mr. HARRY SOWERBUTTS exhibited a set of slides provided by Mr. Payton. The slides were views of Jubilee incidents last year, H.M. ships, yachts, and vessels at Liverpool, New Brighton, Southsea, and Portsmouth, with some fine views about Bath. Some amusing snap-shots of children dabbling and playing on the beaches at various watering-places, and a most interesting set portraying elephants at work in the teak forests and timber yards, were shown.

The children were provided with light refreshments, which they duly and effectually appropriated.

At the close of the meeting all present were very highly delighted by an exhibition of the cinematograph, which was given by Mr. Bentley.

During the evening Mr. OPPENHEIM took the chair, the Rev. S. A. Steinthal having to attend another meeting; the Report of the Examiner was read.

Mrs. HARRY NUTTALL then gave the prizes awarded by the Examiner to the children who had replied to the questions set in Geography during the year.

Very hearty thanks were given to Mrs. Nuttall, Mr. Oppenheim, the ladies and gentlemen who had provided the music, Mr. Harry Sowerbutts, and Mr. Payton.

Thanks were also given to the ladies who had provided for the children, and a special vote was given to Mr. Bentley for his kindness in giving the cinematograph exhibition. The Meeting closed about 9-30 p.m.

---

The 454th Meeting of the Society was held in the Library, on Monday, January 10th, 1898, at 7-30 p.m. In the chair, The Rev. S. A. STEINTHAL, F.R.G.S.

The Minutes of Meetings held on December 23rd and January 8th were read and approved.



The election of the following new members was announced:—Mr. J. L. Berlinger, Mr. Charles Lord, Mrs. Pickering, Mr. Walter Whittaker, Dr. Alfred Hopkinson, Principal of Owens College. Notices of future Meetings were given.

Letters were read from the Rev. S. McFarlane (see page ), Mr. A. J. Herbertson, the Rev. F. B. Shawe, Mr. E. Dewhurst, Capt. D. C. Hume, and Mr. S. L. Coulthurst.

Presentations were announced, amongst which the following call for especial notice:—"Geological Survey of the United States"; "17th Report of the Geological Survey of the United States," Parts I. and II. (2 vols.); Monographs, 25, 26, 27, 28 (4 vols.); Atlas of Illustrations to Vol. 28; Bulletins, 87, 127, 130, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148.

Mr. R. COBDEN PHILLIPS addressed the Society on "The Musical Theory of the Ancient Greeks." (See page 57.) He illustrated his researches with musical instruments. Mr. Phillips referred to melody and harmony; Terpander's system: its probable constitution; to Pythagoras: The great, ditonic, or immutable system; to Alexandrian philosophers: The diatonic, chromatic, and harmonic genera—the various species of the three genera, and their distinctive properties; to the modes: What we can glean from the tables of Alypius; and he then made experimental illustrations of various species and genera—ditonic, toniac, syntonus, etc.—concluding with the "equable" of Claudius Ptolemy.

The CHAIRMAN, Mr. J. D. WILDE, and others took part in the discussion.

Mr. PHILLIPS replied, and gave further illustrations, using the blackboard freely.

Very hearty thanks were tendered to Mr. Phillips for his address, on the motion of Mr. WILDE, seconded by Mr. J. HOWARD REED, and supported by others.

The 455th Meeting of the Society was held in the Library, on Wednesday, January 19th, 1898, at 7-30 p.m. Mr. C. H. SCOTT in the chair.

The Minutes of the previous Meeting were read and approved.

Notice of the next Meeting was given.

The presentations from Mr. G. Thomas, and from the Geological Survey of the United States, and of a map of the Niger from the Under Secretary of State for the Colonies, Paris, were exhibited to the members.

Letters were read from the Rev. H. T. Chapman, Mr. J. S. Masterman, Mr. H. Barber, Mr. F. Curzon, Mr. F. J. Payton, the Secretary of the Italian Geographical Society (Rome), Mrs. Oram, Mr. C. R. Walton, Capt. Hume, Mr. J. C. Blake, Mr. E. Dewhurst, Professor P. Geddes, Messrs. Dean and Dawson, Mr. J. H. Reed, Mr. A. M. Brice, Mr. C. E. Schwann, M.P., Mr. C. H. Bellamy, the Rev. F. B. Shawe, Mr. B. H. Greenwood, the Rev. Dr. Swallow, Mr. C. Lord, Miss A. Romley Wright, the Rev. W. H. Rogers, Dr. Sinclair, the Rev. J. L. Thomas, the Rev. S. A. Stenthal, and Messrs. Hachette and Co. A communication by the British Association Committee was also read, on Geological Photographs, sent to us by Mr. W. W. Watts, Secretary.

Dr. F. H. WORSWICK addressed the Society on his recent visit to "Yellow-

stone Park, U.S.A.," illustrating his address with a number of slides from photographs. The slides were prepared by Mr. F. J. Payton.

Questions were asked, and replied to by Dr. Worswick.

Very hearty thanks were given to Dr. Worswick for his most interesting address, on the motion of Mr. A. MONTEFIORE BRICE, seconded by Mr. T. DRYFUS, of London. Dr. WORSWICK responded.

Thanks were given to Mr. Scott for his kindness in occupying the chair.

The Portuguese National Vasco da Gama Festival in May was explained and described.

Some questions were asked about the festival, which were answered.

---

The 456th Meeting of the Society was held in the Library, on Wednesday, January 26th, 1898, at 7-30 p.m. The Very Rev. L. C. CASARTELLI, M.A., Ph.D., in the chair.

The Minutes of the previous Meeting were read and approved.

The election of Mr. H. G. Wrigley and of Mr. W. H. Collier as ordinary members was announced.

Letters were read from Professor Guido Cora, M.A. (Rome), Herr L. Friederischen, the Rev. T. F. Nicholas, Herr Karl, W. Hiersemann, Messrs. Sir Donald Currie and Co., the Rev. S. A. Steinthal (Gibraltar), Miss Turton (Chelsea), and Mr. A. J. Herbertson. Presentations to the Society were announced.

The Rev. F. B. SHAWE, M.R.A.S., addressed the Society on "Western Tibet" (see page 1), illustrating his address with a number of very fine lantern views, maps, and diagrams.

Several questions were asked, and replied to by Mr. Shawe.

Very hearty thanks were given to Mr. Shawe for his admirable address, on the motion of the Right Rev. Monsignor GADD, seconded by Mr. J. D. WILDE. Mr. SHAWE responded.

---

The 457th Meeting of the Society was held in the Library, on Monday, January 31st, 1898, at 7-30 p.m. The SECRETARY in the chair.

The Minutes of the previous Meeting were read and approved.

The election of Miss C. Herford and Mr. Jukor as ordinary members was announced.

Presentations were announced, special attention being called to the following:—A physical map of France from Messrs. Hachette and Co.; map of South Africa, Messrs. Donald Currie and Co.; a number of photographs, Mr. James Wilde; and two copies of Greenwood's Nautical Act, 1898.

Notice of the next Meeting was given.

Captain W. N. GREENWOOD, F.R.Met.Soc., Master of Glasson Dock, Lancaster, addressed the Society on "The Unification of Time at Sea" (see page 24), illustrating his address with charts specially prepared and with the blackboard.

Questions were asked, and replied to by Captain Greenwood.

Very hearty thanks were tendered to Captain Greenwood, and it was suggested that the Council should have its attention called to the question.

Captain MURRY, of the steamship "Milwaukee," at present at Liverpool, was present, and with other captains thoroughly endorsed Captain Greenwood's proposition. Captain GREENWOOD responded.

---

The 458th Meeting of the Society was held in the Library, on Wednesday, February 2nd, at 7-30 p.m. In the chair, Mr. HARRY NUTTALL.

The Minutes of the last Meeting were read and confirmed.

Reports of the Andrée balloon in British Columbia (see below), of the mound builders in British Honduras, communicated by the Very Rev. C. Casartelli, M.A., Ph.D. (see following), a preliminary geological report of the Jackson-Harmsworth Expedition, and an account of the Middleton Parish Church were read (see following).

The SECRETARY addressed the Society on the variety, the interest, the commercial and political value of the books, maps, and papers, from corresponding societies, and he exhibited a small selection from those received during the past year. Special attention was called to a number of the papers, either because of their excellence or from the unique character of their contents.

The CHAIRMAN moved a vote of thanks to the Secretary; the Most Rev. Monsignor GADD, V.G., seconded, and it was carried. The SECRETARY responded.

Communicated by the Geographical Society of the Pacific.

### WAS IT ANDREE'S BALLOON?

#### A WANDERER OF THE SKIES CARRYING TWO MEN SEEN IN BRITISH COLUMBIA.

THE Geographical Society of the Pacific is watching for any clues which may lead to the finding of Professor Andrée, who set off for the North Pole on July 11th last.

Last month a report reached the Society that a balloon had been seen near Quesnelle Lake, Cariboo district, British Columbia, in August. Letters of inquiry were sent to this point, but the mails are irregular up there during winter, and no reply arrived till yesterday (Dec. 25th, 1897).

Professor Davidson and Mr. Lund, the Consul for Sweden and Norway, think the story very doubtful for several reasons.

Six months ago the Society sent up to the Behring and Arctic a large number of woodcuts of the balloon for distribution among the whalers and sealing vessels. These had, on the reverse side, in English, a brief statement of Andrée's objects and a request to give such assistance as he might wish. It was thought that the balloon might drift over Alaskan waters. But few hazarded a supposition that it could come so far south as the Frazer River country.

The first report of the Society stated that it was descending, when the observers saw some object, they could not tell what, thrown from it, and it began to ascend, then floated off north-eastward.

This would take it towards the Hudson's Bay region, where the only habitations are the widely-separated posts of the Hudson's Bay Company.

The following is the reply to the Society's inquiry:—

Cariboo Hydraulic Mining Company (Limited),  
Quesnelle Forks, B.C., Dec. 7th, 1897.

T. F. TRENAR, Esq., Assistant Secretary of the Geographical Society of the Pacific, San Francisco, California,—Dear Sir,—Yours of the 22nd inst., referring to the balloon claimed to have been seen in the air at the Horsefly Hydraulic Mine in British Columbia by Mrs. Sullivan and her daughter, received and noted. In reply, I will state that my information is as follows:—

About three p.m. on some day between the 4th and 7th of August I returned from the company's stamp mill to my office, when I met my wife, who informed me that Mrs. Sullivan and her daughter had seen a large balloon passing over the camp from west to east. Upon asking my wife if she also had seen it, she replied she had not; but while walking in front of the office she noticed Mrs. Sullivan (wife of the company's blacksmith) standing in front of one of the tents occupied by the Sullivan family, looking up in the sky in a southerly direction, and noticed that Mrs. Sullivan called her daughter, a young woman of about eighteen years of age, who went to her side and looked up in the direction indicated. Both mother and daughter appeared to watch the object for several minutes, they having turned their faces from a southerly direction to an easterly one. Mrs. Sullivan called later and asked Mrs. Hobson if she had seen the balloon. Later on in the day I called on Mrs. Sullivan and asked her to describe to me what she had seen, which she did as follows:—

“While looking up over the hydraulic bank (pointing in a southerly direction) I noticed a round, grey-looking object in the sky. As I continued to watch it appeared to get larger as it descended. I could see two objects, one much smaller, apparently suspended from the larger one above. It continued to descend until I could plainly see that the object was a balloon with a large basket hanging under it. It finally commenced to swing violently back and forth and move very fast in that direction (pointing easterly toward the east arm of Quesnelle Lake) and began to ascend. I then called out my daughter, and, after pointing the balloon to her, we watched it rise rapidly until it disappeared in an easterly direction.”

I asked Mrs. Sullivan if she had ever seen a balloon before, and she replied that she had seen small ones.

Miss Sullivan corroborated her mother's statement from the time her attention was called to the balloon until it disappeared.

Both Mrs. Sullivan and her daughter are intelligent persons and appear to be positive that the object they observed moving rapidly through the sky was a large balloon, and while I am disposed to believe their statement, I regret that there are no other persons in the vicinity who saw the balloon, so that its appearance in the region could be confirmed beyond a reasonable doubt. I made inquiries of a number of persons at Harpers, about four miles south of Horsefly, if they had either seen or heard of a balloon being seen, but none had either seen or heard of it. Mr. Newson may be able to give you the exact date the balloon was noticed.

I enclose you a photograph of the Horsefly Mining Company's camp. The cross marks approximately the position of Mrs. Sullivan and her daughter when the balloon was observed, and the dotted lines in the sky the direction

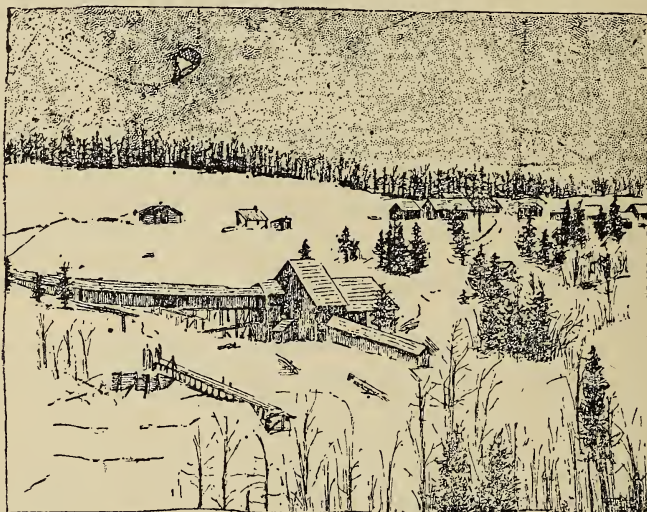


of the balloon, as described by Mrs. Sullivan, as it descended and ascended as it passed east.

The geographical position of the Horsefly Hydraulic Mining Company's camp is on the west side of the Horsefly River, about four miles north of the confluence of the Little Horsefly River and seven miles above Quesnelle Lake, in latitude 52 deg. 20 sec. and longitude 121 deg. 30 sec., Cariboo district, British Columbia. (See official map of British Columbia, 1893.)

The blacksmith, Mr. Sullivan, and family have removed to the Fifty-nine-mile House. Should you desire to communicate directly with them their address would be Clinton, B. C.—Very truly yours,

J. B. HOBSON, Manager.



As the Balloon appeared to Mrs. Sullivan and her daughter. They stood near the largest building. The dotted line shows the course of the aerial traveller.

### MOUND BUILDERS.

(From the *Angelus*, Belize, British Honduras, January, 1898.)

DR. GANN, of Corozal, sent us a copy of a paper on "Some Ancient Mounds in Central America," read by him before the Society of Antiquaries, Feb. 25th, 1897. It embodies the result of his opening between fifty and sixty mounds in British Honduras, Guatemala, and Yucatan. For the purpose of description Dr. Gann divides the mounds into seven classes: (1) Sepulchral; (2) containing an oval plastered chamber; (3) erected over buildings; (4) fortified; (5) signal and look-out mounds; (6) refuse mounds; (7) mounds of unknown use.

These mounds are interesting as showing us in the objects found in them the manners and customs of an extinct race, what were their manufactures, and how far they were advanced in the arts. And, first, who erected them? A probable theory makes them the work of a race of Indians who came from North America and supplanted the Toltecs and more civilised Indians of

Mexico. This supposition is borne out by the similarity between these mounds and those found in large numbers in the United States.

(1) The sepulchral mounds show that four distinct kinds of interment were practised—in a chamber within the mound, in an urn after partial cremation, in the recumbent and in a sitting position.

(2) The oval plastered chambers contained (except in one instance in which the chamber had been used for sepulture) nothing further than the pottery or other manufactured objects of the period, and it is therefore uncertain for what purpose they were intended.

(3) The most interesting mound erected over buildings is that at Santa Rita in the Northern District. This mound was 290 feet in circumference, 80 feet in length, 66 feet in breadth, and 14 feet in height. It covered a building of considerable size, the walls of which were decorated on the outside with painted stucco. The south wall was completely destroyed, but the north wall and parts of the east and west walls which joined it were in good preservation.

“The north wall was 35 feet 8 inches in length, in the centre being a doorway 3 feet in breadth; 4 feet 10 inches from the ground, a projecting cornice ran round the building, below this the wall was smoothly plastered, and painted in various devices, the plaster ending in a layer of very hard cement, which forms the floor around the building. Above the cornice the wall is composed of large squared stones, mortared together, in places rising as high as 5 feet, but in places broken down nearly to the cornice. The east wall is standing for 4 feet of its length, and contains two human figures. The west wall is perfect for 9 feet, and also contains two human figures besides other devices. The east half of the north wall contains ten figures, nine being human, the figure next the door being doubtful; the west half has eight figures, seven being human, the figure next the door corresponding with that on the opposite side. The lower 18 inches of the north wall have unfortunately been denuded of plaster by the damp, so that it is impossible to follow the paintings here. The walls are 14 inches thick, and the colours used are red, yellow, green, black, brown, and blue. The figures are painted on a dark blue background on the east wall and east half of the north wall, and on a salmon-coloured background on the west wall and west half of the north wall. The paintings were preserved from damp in the following way: Built up from the ground all round the wall, and reaching as high as the cornice, was a wall of rough blocks of limestone; this was separated from the paintings by about 1 inch of clear space. Extending outwards, and downwards from the cornice, and meeting this wall, was a layer of cement 8 inches in thickness, so that all water must necessarily drain away from the painted part of the wall. The copies of the figures on this wall were first traced and then coloured by the side of the wall.

“The east wall was the first exposed; to the left of the figures was a table of hieroglyphics extending the whole height of the wall from cornice to floor, but these (having no proper paper at hand) I was unable to trace at once. The two figures I traced very imperfectly with oiled foreign notepaper pinner on the wall. Unfortunately when I arrived next day I found the wall had been entirely denuded of stucco, which I afterwards found the Indians had collected; and, after powdering it, many of them took it as medicine, mixed with water. Of course these hieroglyphics were the most important part of the paintings.”

The figures, as pictures of the human form, according to our ideas of beauty, are most grotesque, and show a low state of art.

(4) The fortified mounds are mostly walls built of earth and stone from 10 to 15 feet high, and about the same thickness at the base, enclosing circular spaces which are raised above the surrounding ground-level and are in contact or near large lookout mounds, which confirms the theory that they were used for the purpose of defence.

(5) Signal or look-out mounds. A chain of these is found along the coast and also in the interior at a distance of about 10 miles apart. They are about 50 feet in height, pyramidal in shape, with a circular and comparatively small base. They do not contain any traces of burial, pottery, or implements, and therefore seem to have been used for the purpose of communicating by signalling, as a fire lighted on the top of one of these mounts would be visible over the bush from the top of the next.

(6) Refuse mounds, which are found plentifully all over the colony, are valuable as showing what were the common objects in use among the people who hundreds of years ago inhabited the colony of British Honduras.

(7) In the mounds of unknown use, formed often of clay and broken limestone blocks, Dr. Gann found vases of glazed and unglazed pottery, broken clay figures, pieces of jade, and flint spear heads.

No metal instruments were found among the objects collected from these mounds, but only stone weapons, knives of obsidian, jade axe-heads, and flint daggers. In the mounds were also found human heads moulded in plaster, vases decorated with human heads, arms and legs, head of a bird in pottery, water-jars (rough and polished), small pottery, and jade beads.

Dr. Gann will, we hope, continue his excavations, and come across some more hieroglyphics to throw further light upon the manners and customs of a vanished race.

#### OUR PARISH CHURCHES.—ST. LEONARD, MIDDLETON.

(From the *Church Monthly*.)

THE Parish Church of Middleton is one of the most ancient structures in the county of Lancashire, and second to none for its historical interest. The western arch is Norman work of about the year 1120, the pillars probably being still in the same condition as they were left by the axes of the masons. The arch, once a semi-circle, has been rebuilt in a pointed style to suit architecture of a later date, and the Norman mouldings were put in almost at haphazard. Other remains of similar work or to be seen in the arch over the pulpit, and stones carved with diaper pattern are built into the north wall of the nave. The earliest mention of any rector yet found, is that of "Peter, parson of Middleton" in the year 1250. In an arched recess of the north wall is a sepulchral slab, bearing a great incised cross, but having no inscription. Some antiquaries have supposed that it may have been used as an "Easter sepulchre," for the consecrated elements from Good Friday to the dawn of the Day of Resurrection. The Bishop of Stepney thinks it may be of about the year 1300, but adds "the only thing which seems to me like an earlier date is the base of the cross being curved instead of with steps. This seems archaic." Bishop Durnford considered it to be the tomb of some ancient founder. There can be no doubt that it belongs to the de Middletons, the Saxon family who seem to have been left undisturbed at the Conquest, and it is quite possible that it commemorates the builder of the Norman



church. Over the centre of the tomb is a corbel, which probably bore the image of a saint previous to the Reformation. Just above the recess, but on one side of it, is the matrix of a brass which evidently represented a lady with hands raised in prayer. Probably this would be the monument of Maud de Middleton, the heiress of Roger, the last male of his line, who died about the year 1322. She married John de Barton, of Rydale, in Yorkshire.

A stone coffin found beneath the north aisle during the restoration of the church under Bishop Durnford, no doubt belonged to a member of this family. Nothing further is known of the little Norman church of which these are the relics, or any earlier building that may have preceded it.

But we possess a most interesting record of the erection of a new church by Thomas Langley, Prince Bishop of Durham from 1406 to 1437, who was made a Cardinal by Pope John XXIII., and was Lord Chancellor of England in the reign of Henry IV. Many evidences remain of his goodness and greatness. His tomb stands before the Altar of the Blessed Virgin and St. Cuthbert, in the lovely Galilee Chapel at the west end of Durham Cathedral, hard by the dust of the Venerable Bede. Two of the four pillars in each group supporting the roof of the chapel, and work in other parts of the Cathedral are also his memorials. He was a Middleton boy, and in his exalted position he did not forget his native village. On August 22nd, 1412, the Cardinal Prince Bishop consecrated the church to St. Leonard, and dedicated two altars in the nave, the one founded by himself, to the Blessed Virgin Mary and St. Cuthbert, and the other, by the Bartons, to St. Chad, our first Bishop, and St. Margaret. The licence issued by John Bourghill, Bishop of Lichfield and Coventry, tells us that Langley bore the whole cost of rebuilding the church, and describes the beautiful and well-finished stonework which adorned it. He endowed his chantry for the instruction of the youth of Middleton, and here in all likelihood the famous Dean Nowell, to whom we owe so large a portion of our Catechism, received his early education.

Only portions of the church erected by Langley now remain. The tower, the exquisite porch, whose rare beauty is fast crumbling away, and some parts of the walls and arcading, are all that we can attribute to him. The clerestory and roof, and the greater part of the walls, are of the date 1524, when the church was considerably enlarged as a thankoffering for the victory of Flodden, in which "the lovely lads of Lancashire" played so great a part. Upon the south parapet there is a stone bearing the inscription "Ric Assheton and Anna his wife 1524." In the year 1438, the manor of Middleton had been conveyed to Ralph, "the black knight of Ashton," on his marriage with the heiress Margery Barton. It was his grandson Richard who led his archers at Flodden, and so distinguished himself that he was knighted upon the field of battle. He dedicated his banner and armour to St. Leonard, and in the manorial chapel, a flag, helmet, sword, and spurs, supposed to be the same, may still be seen. The fragments of a window, placed in the church at that time by subscription, form a more valuable memorial of our local connection with the battle so decisive in the history of this realm. Sir Richard and his lady, and other leaders, the archers in jerkins blue, and their chaplain, "Henry Taylyer," are represented kneeling in church before going forth to the war. Each archer has a sheaf of arrows at his back, and a long bow over his shoulder, and above the bow his name clearly inscribed. Our registers date from 1541, and the first name is that of the family of one of the Flodden heroes. Several of them have descendants in Middleton to-day.



On the south side of the church is another ancient chapel belonging to the Hopwood family, of Hopwood Hall. At present it is boxed in by a high panelled railing, but we hope some day to see it restored to its original condition. Behind the panelling in the south wall is the only piscina in a perfect condition now remaining in the church.

Within the sacarium are preserved the best series of monumental brasses to be found in Lancashire and Cheshire, all commemorating members of the Assheton family. Before the altar lies the effigy of Master Edmund Assheton, Rector, who died in 1522. He wears Eucharistic vestments of a very simple character, and holds in his hand a chalice, and the sacramental wafers bearing the monogram I.H.S. The earliest brass lying on his right has no inscription, but probably represents his grandparents, the "Black Knight" and Margery, the heiress of Middleton. To the left of the priest lies his sister, Alice, whose three husbands were originally represented with her; but one was stolen some years ago. The latest brass is of remarkable merit for its date, and celebrates another of Middleton's greatest sons, Ralph, commander of the Parliamentary forces in Lancashire during the Civil War, and a member of the Long Parliament. He and his yeomen took part in the defence of Manchester, the siege of Lathom House, and every other fight of the period which fell within their reach.

A beautiful oak screen once stretched across the whole width of the church, separating the chantries and chancel from the nave. It was subjected to ruthless damage from time to time, but considerable portions still remain. The centre part, adorned with the arms of the Assheton alliances, is probably of the early sixteenth century, while Langley's chapel is enclosed by beautiful work of his period.

It is proposed to restore these screens in memory of Dr. Durnford, the late Bishop of Chichester, who for thirty-five years (1835 to 1870) was rector of this parish. He found the church with its western arch bricked up, the walls covered with plaster, and blocked up with huge galleries and unsightly pews. He left it in its present condition, and built schools and churches with such wise forethought, that "the village," now grown to a borough of twenty-five thousand inhabitants, includes six parishes and a majority of Church-people. He loved Middleton to his last hour, and proved himself a worthy successor of Langley as a benefactor to this ancient parish. Under the guidance of Messrs. Bodley and Garner we hope to be able to complete the restoration work so well begun. The curious wooden erection which surmounts Langley's tower dates from 1709, when the old bells were hung a storey higher. These were removed by Sir Ralph Assheton and replaced by six bells cast by Rudhall, of Gloucester, in 1714. It is suggested that wood was used because the sandy foundations of the tower would not bear additional weight, or that its object was to give sweetness to the tone of the bells. In any case those who live within sight of its queer gables, quaint in their ugliness, would not willingly exchange them for a stone structure. They are not ashamed of their sobriquet:—

"A stubborn people,  
With a wooden steeple."

At the beginning of this century the rector ordered a bell to be rung at ten minutes before ten, as a signal for the closing of shops, and that all who

were abroad might hasten home and get to bed. In time this bell took the place of the curfew, and old people tell with relish how they fled homewards at the sound of the "nowster," lest they should be locked out by their stern fathers. Silk weaving was then the staple trade. Every cottage had its loom house, and was the workshop of the whole family, over which the father ruled with unfaltering hand. In these days of huge factories the precious ties of family life are sadly slackened, and our young people are too apt to forget the fifth commandment. May the "nowster" keep it every fresh in their memories, and dear to their hearts! The name of this bell is familiar to every Middletonian, and yet none can give a satisfactory explanation of its meaning. It was once the nickname of the man who rang the ten o'clock bell, but whether he conferred it upon the bell, or the bell upon him deponent sayeth not. "Now stir" is the popular rendering, and to this day, when the warning tones ring out, those who have been kept late in our meetings begin instinctively to get ready for departure. Mears and Stainbank, the successors of Rudhall, added two bells to our peal in 1890.

T. E. CLEWORTH, M.A.

The Rectory, Middleton.

---

The 459th Meeting of the Society was held in the Library, on Monday, February 7th, 1898, at 7-30 p.m. In the chair, Mr. J. D. WILDE, one of the honorary secretaries.

The Minutes of the last Meeting were read and approved.

Mr. R. A. Hepworth was nominated for membership.

Presentations were announced. The especial attention of the members was called to Nos. 15 and 16 of the new Oxford "Historical Atlas."

Correspondence was read from Captain Hume, Sir G. Goldie, the Rev. Dr. McFarlane, the Rev. F. B. Shawe, Sir R. Temple, Bart., G.C.M.G., Mr. W. H. Rogers (S. Geo. Soc.), Mr. J. T. Thomas (Cardiff Geo. Soc.), the Rev. T. F. Nicholas (Klondyke), and Captain W. Greenwood.

Notice was called to the proposals for Commercial Education by the London Chamber of Commerce, and to the proposed issue of the Citizen's Atlas by Messrs. Newnes.

## COMMERCIAL EDUCATION.

THE London Chamber of Commerce will propose the following resolution before the Associated Chambers, at the annual meeting, to be held at the Hôtel Métropole, Whitehall Place, on March 15th, 16th, and 17th: "That the time has now arrived when an attempt should be made to provide, throughout the United Kingdom, facilities for training youths destined for a commercial career, and, in order that this training may be on a uniform basis, some scheme of commercial education should be framed for general adoption, thus enabling simultaneous examinations to be held, and the granting of certificates of efficiency, which shall be of equal value, in whatever part of the United Kingdom they may be gained. That the executive council be requested to appoint a representative committee to draw up a scheme of commercial education, to form the basis of examinations; and that a conference should be called of representatives of the County Councils, or their technical educa-

tion boards, or committees, with the object of ascertaining how far the funds set apart for technical education may be utilised in assisting the commercial education movement."—*Standard*, Jan. 31st, 1898.

The subject of the next Meeting was referred to.

Captain D. E. HUME, F.R.G.S., Conservator of the Humber, addressed the Society on "A Journey from England to Chili, through the Straits of Magellan." The address was illustrated with maps, charts, and lantern slides, and was full of interest.

Several questions were asked by members present, to which Captain Hume replied.

Mr. R. D. CALVERT moved a very hearty vote of thanks to Captain Hume for his address; and it was seconded by Mr. F. J. ROBERTSHAW, and carried. Captain HUME responded.

Mr. E. T. WADE (a visitor) had brought a large number of photographs of Chili, which he exhibited to the members after the Meeting.

The 460th Meeting of the Society was held in the Library, on Wednesday, February 16th, 1898, at 7-30 p.m. In the chair, Mr. HARRY NUTTALL.

The minutes of the previous Meeting were read and approved.

The election of Mr. John Kerr as an ordinary member was announced.

Presentations of a map of Africa from Messrs. W. and A. K. Johnstone, a map of South Africa from Messrs. D. Currie and Co., and others, were announced.

The next Meeting was referred to.

Letters were read from Mr. E. W. Mellor, the Canadian Institute (with a file of the *Toronto Mail*, containing an account of the meeting of the British Association at Toronto, 1897), Mr. B. H. Mullen, the Rev. J. Hutcheon, Mr. E. J. Russell, Messrs. W. and A. K. Johnstone, Mr. B. Mullen, Mr. J. R. Newby, M. du Fief, Mr. J. Irlam, Captain Greenwood, and Mr. Edward Milner.

An account of a total eclipse at Jeur from Fr. X. Haan, S.J., Bombay, communicated by the Very Rev. L. C. Casartelli, M.A., Ph.D., was read.

The paper on "Western Soudan" was then read by the SECRETARY, illustrated with a large number of photographs, lantern views, English, French, German, and Belgian maps.

Several questions were asked, and replied to.

A very hearty vote of thanks was tendered to the Secretary for his interesting and valuable address. The SECRETARY responded.

## THE TOTAL SOLAR ECLIPSE AT JEUR.

(From the *Catholic Examiner*, January 29th, 1898.)

THE precious 117 seconds of Jeur are gone. All the preparations made since the beginning of 1897, the costly instruments that have been constructed, the trouble of bringing them over to the exact spot for observation, all these have reached their aim; and now we are awaiting the reports of the result. This time, at any rate, those hindrances to the success of so many expensive



expeditions in other countries on similar occasions—we mean clouds, mist, and fog—kindly kept away; the sky was as clear and transparent as a crystal, and not even the slightest breeze was felt during the totality—a condition not to be purchased for any amount of money. It is true, the plague considerably affected the eclipse expeditions. If the different parties had been more spread over the whole track of the shadow, it would have been more favourable for the results; and the imposing collection of so many first-class instruments, as were to be seen at Jeur, would not have been possible. Clearly, the crowding of these instruments on one spot was not favourable for the result desired. However, as the instruments were of different kinds, we may expect that things not made visible by one instrument may be shown by another, and *vice versa*. The Americans used exclusively slit-spectroscopes with photographic apparatuses; the spectroscopes of the parts of the College of Science of Poona were nearly all without slit. The Japanese had an arrangement similar to that of the Americans; and, two miles off, an American gentleman took photos on quite a new principle.

In Mr. Naigamwala's party, observations were made with the naked eye, which was not the case either in Mr. Cambel's or the Japanese camp. These observations have not the same value as photographs, for the eye is subject to many affections that influence the form and colour of objects, whereas in a photograph the object itself produces its own image on the plate.

My task was to observe the variations in the spectroscope before, during, and after the totality; and for this purpose an instrument of St. Xavier's College was used. It consisted of a three-inch telescope by Stewart, London, and a Hoffmann's direct view spectroscope, with five prisms, made by Leybold, Cologne. This apparatus was mounted equatorially; so that by the turn of a single screw the moon could be kept within the field of vision. The eye-piece of the telescope was removed, and likewise the slit of the spectroscope; the two instruments were then joined together by a strong brass tube, and the image of the sun was focused to where the sun had been; thus the light was very strong, none of it was lost, and the object retained its natural figure.

About a quarter of an hour before totality, I sat down at my instrument; but it showed me nothing, except the brilliant colours of the spectrum without the dark lines. The country presented the same aspect as when it is observed through an eye-protecting glass of neutral tint; nothing was to be seen of the pale yellow colour, so often observed on former occasions, and the horizon kept its natural colour, yet was less bright than in full sunshine. When I looked up two minutes after totality, this neutral aspect was not to be perceived, everything appearing in its usual aspect.

From this we may gather that the yellow colour is due to our atmosphere, and that the neutral tint is a consequence of the affection of the eye passing from the light sunlight to the darkness of the eclipse. If this were not the case, the neutral colour would have been visible also after totality, the conditions being still more favourable for it.

Ten minutes before totality, I put my eye to the eye-piece of the spectroscope; and did not remove it until the totality was over; the first change took place at 1h. 14m. 17s.; the time is given according to the chronometer, plus the correction of 8m. 13s. Then slowly the three lines, b, E, F, made their appearance, and they grew steadily darker and darker. Gradually more lines became visible, and at 1h. 17m. 29s. all lines could be distinctly seen as in the ordinary solar spectrum.



The spectrum, which up to this had filled the whole field of vision, now began to shrink; and at this moment the lines D3 and F began to project. The projecting lines were of brilliant colours, yellow and blue. Then slowly the spectrum vanished. When it was three-fourths of its original breadth, other lines began to project, but not as high as D3 and F.

When it was reduced to one-fourth, most of the dark lines of the spectrum were projecting; but they were not all of the same height, and some of them had no projection at all. E and b were rather high; yet had only half the length of D3, and F. Several lines of 520mm. to 525mm. wave length were by far shorter than b. The same I observed of several lines between b and F. If this observation was correct, it will go to prove that the substances of the sun's atmosphere are not distributed equally; for the shorter lines must belong to materials that are in the lower parts of the atmosphere only. When we come to compare this observation with the photograph taken at the same time, we shall know more of this matter.

Next, after the observation just described, came the vibration of shadows, which announces the "flash." The impression made is similar to that experienced by a traveller in a fast train who watches from the window of his carriage the sudden passing along a length of trellis-work, the openings of which get narrower and narrower until they finally disappear.

Just before the totality I could see the bright lines, but not so distinctly as before. I kept my eye fixed on one part of the spectrum, a group of lines between 500mm. and 505mm. wave length. The flash is the moment when the continuous spectrum of the sun disappears and the dark lines become light throughout.

When the flash set in, only three-fourths of the group of lines, upon which I had fixed my eye, were bright.

Most fortunately, Mr. Naigamwala has succeeded in the most difficult task of taking a photograph at this important moment. This will, no doubt, be of the greatest use, for it is very difficult for any observer to see a weak thin line at the side of a bright one, especially when the time for observation is less than a second, as the duration of the flash seemed to me to be.

After the flash there was complete darkness, only the bright arcs of D3 and F remained visible, and in the middle of the field of vision appeared a luminous, greenish, broad arc, which was at first weak and then grew steadily in brightness and extension. This was the line 1474, the light of the corona.

The two arcs of D3 and F were of a dazzling light, and four large prominences appeared nearly equidistant from one another, two of them about 20 deg. from the moon's line of motion, the one above it and the other beneath it, and two at a distance of about 40 deg. or 50 deg. in the upper and lower parts respectively.

One of these prominences, that which appeared nearest the line of motion, towards the north showed a continuous spectrum for the first five or ten seconds. It was difficult to distinguish the colours, and lines were not to be distinguished at all. A clearer observation of this phenomenon would have been of much importance; for it is only when the lines are visible that we can determine whether the spectrum does or does not belong to the prominence. A star near the sun in the proper position can produce the same effect, even though it is not visible to the naked eye.

If, after all, the spectrum did belong to the prominence, it would prove that the lower part of the sun's photosphere was lifted to a certain height by the eruptions which produce the prominences. We have still to learn whether any of the photographs taken during the first seconds show a similar spectrum.

The prominences were most beautiful, especially the one nearest to the north. I estimated its height to be two or three minutes, and this would correspond to the enormous height of about 100,000 kilometres, for one minute represents a distance of 42,000. This prominence looked like a burning tree, and showed the same form in the yellow as in the blue arc.

As the time advanced, the brilliant arcs disappeared, and the prominences were left like four glowing balls, yellow and blue. Then came the steady growth of the corona light which filled the field of vision. It showed two dark rifts, parallel to the motion of the moon, and thus hid from view any other arc or light that may have been there. To see how far the rays extended, I turned the telescope, but could not find the end without turning the image of the dark moon entirely out of the field of the telescope. Therefore, the rays of the corona must have been longer than three diameters of the sun. By the movement of the instrument the C line was brought into sight. The four prominences appeared in the most beautiful red; and their form was here the same as that of the D3 line, which shows that helium and hydrogen are equally distributed in them. Thirty-five seconds before the end a continuous spectrum became visible at the eastern side. The red and yellow were quite distinct; but the green and blue were scarcely perceptible, as the corona light near the moon was too strong. For a moment I watched the corona light; it seemed to be steady.

Whilst still engaged upon this observation, suddenly a very bright continuous spectrum, about one-tenth of the breadth of the moon, shot like a lightning through the field. I had to remove my eye from the instrument. The totality was over, and I had not seen the western side of the moon at all. It seems, I had turned one-half of the moon's image out of the instrument, and thus this part entirely escaped my observations.

If we take everything into consideration, the instruments employed, the clearness of the sky, the stillness of the atmosphere, the skill of the observers, we may surely expect a better result from these observations than has ever been obtained on former occasions. Much time will have to be spent in collecting, examining, and combining the various observations and photographs; but let us hope that the work, when complete, will bring us a good step further in our knowledge of the sun's atmosphere and of the sun itself.

FR. X. HAAN, S.J.,

St. Xavier's College, Bombay.

The 461st Meeting of the Society was held in the Library, on Friday, February 25th, 1898, at 7-30 p.m. In the chair, Mr. H. NUTTALL, Vice-Chairman.

The Minutes of the last Meeting were read and approved.

The election of the Technical Committee of the Golborne Urban District as an affiliated society was announced.

Dr. SINCLAIR, J.P., addressed the Society on his "American Tour in 1897." The address was illustrated by several maps and a large number of lantern views made by Mr. F. J. Payton from Dr. Sinclair's photographs. The address was very interesting.

A few questions were asked, to which Dr. Sinclair replied.

It was resolved that the hearty thanks of the Society be tendered to Dr. Sinclair for the address he had just given. Moved by Mr. J. HOWARD REED, seconded by Alderman I. BOWES, supported by Dr. F. WORSWICK, and carried. Dr. SINCLAIR responded.

---

The 462nd Meeting of the Society was held in the Memorial Hall, on Wednesday, March 9th, 1898, at 7-30 p.m. In the chair, Mr. Alderman I. BOWES.

The SECRETARY announced the arrangements for Meetings until May next.

Mr. E. W. MELLOR, J.P., F.R.G.S., F.I.Inst., addressed the Society on "Holland in England." He illustrated the address with a magnificent set of lantern views taken from photographs taken by himself last year in South Lincolnshire, North Norfolk, and at Chatsworth. The address was listened to most intently, and gave great pleasure to a large meeting.

Mr. J. HOWARD REED moved a vote of thanks to Mr. Mellor for his admirable and interesting address, and to the Demonstrator for his very able manipulation of the lantern. The SECRETARY seconded the motion, which was carried enthusiastically. Mr. MELLOR responded by saying it gave him very great pleasure to do this service for the Society.

---

The 463rd Meeting of the Society was held in the Library, on Wednesday, March 16th, 1898, at 7-30 p.m. In the chair, the Rev. S. A. STEINTHAL, F.R.G.S.

The Minutes of the last two Meetings were read and approved.

Presentations were announced.

The elections of Dr. A. W. Ward as an honorary member and of Mr. A. Hopkinson, Q.C., as a vice-president were announced.

Notice was given of the Annual Meeting and of the other Meetings in March, and some reference to further Meetings in April and May.

A large amount of correspondence was placed on the table, some of the letters from the Rev. T. F. Nicholas, Bishop Tucker (Uganda), Oran (20th anniversary, 16th of April), the Rev. F. C. Smith (announcing the Missionary and Colonial Exhibition at Kensington on May 10th to 14th), and the Rev. R. S. Swallow, M.D., being particularly referred to. It was announced that in consequence of Dr. Swallow having to be away from home on the 21st, the address on "China" from him, expected to be given on that date, was adjourned.

Mr. MARK L. SYKES, F.R.M.S., addressed the Society on "The Geographical distribution of Butterflies in relation to Protective Mimicry." Mr.

Sykes illustrated his address with a large number of lantern slides, and with several boxes of the butterflies.

Questions were asked, and replied to by Mr. Sykes.

A very hearty vote of thanks was given to Mr. Sykes for his most interesting lecture.

The following communication from Dr. Black, S.M., was read:—

# “AUSTRALIAN WEATHER GUIDE.”

(A new meteorological issue.)

## INTRODUCTION.

THE publishers of this work, Messrs. Sapsford and Company, Brisbane, confided to me the other week that they thought the time had come when a thoroughly scientific almanac, dealing principally with the new science of Meteorology, in its relation to the Australasian colonies, would be acceptable to the general public, and especially so if compiled in a popular and readable manner. I entirely concurred with their view, whereupon they asked me if I could find time to edit the publication. Willingly I agreed, provided that the Queensland Government would kindly grant the necessary permission. Ever ready to assist a scientific undertaking, my Honourable Minister, the Hon. J. R. Dickson, generously gave the required approval, and my thanks, coupled with those of the publishers, are hereby sincerely tendered to him.

Astronomy, we all know, is the most sublime of the sciences; and it will not be ignored in the present work, inasmuch as we shall give, with sufficient accuracy for all ordinary purposes, specially constructed tables of the rising and setting of the sun, with notes of the moon and planets; short histories, indeed, of the physical condition of our fellow-worlds, which should bring home to our readers the wonderful variety that obtains even among the members of our own tiny system, which, compared with the Cosmos, is but as the thousandth part of a tear in relation to the entire Pacific Ocean. Sublime, however, as is the study of astronomical questions, meteorology is, *par excellence*, the more practical of the two, especially as regards the momentous and varied interests of these rapidly advancing colonies. Interesting indeed as it is for the astronomer to observe the *umbra* of some gigantic sun-spot, in which the earth would lie as would a small pebble in the craters of our hugest volcano; absorbing as is the study of the configuration of Mars, and the wonderful characteristics of the lunar craters, old sea-floors, and mountain chains—not forgetting also the cloud-belts of the mighty Jupiter, and the wondrous rings of Saturn, as instances—it is of infinitely more importance, not only to the practical business men of this Greater Britain, but also to every section of the Australasian community, from the wealthy merchant to the humble housewife, to be able to interpret aright coming changes of weather, and the indications and use of their meteorological instruments—even if such be only a pet corn and a rheumatic joint. This book will unquestionably appeal to the sympathies of the squatter, the farmer, the agriculturist, the horticulturist, the miner, and particularly to the sailor; and in no less degree will the invalid, to whom a knowledge of coming weather is of the first importance, be interested. We propose to show, in a concise and popular manner, how the forecasts are generally arrived at; and we shall give examples of meteorological charts, showing the conditions which produce



transcontinental rains, thunder-storms, cold spells, and southerly "busters," tropical hurricanes, and other phenomena.

Forecasts of such, however, cannot be made without observatories; and, *prima facie*, without the best and most trustworthy observers and instruments. Herein will be found a map showing the principal stations from which we daily derive our information by wire; and here it is but fitting, and an act of justice, to tender my sincere acknowledgments to the telegraphic superintendents, managers, and operators throughout all the Australias for their hearty co-operation in forwarding reports, and for the extreme accuracy with which they are usually transmitted; and to the individual members of my office staff. My sincere thanks are also tendered to my meteorological colleagues of the sister colonies for their support and sympathy. By a system of inter-colonial exchange, we daily receive from them the figures from their own respective provinces, including Tasmania, New Zealand, New Caledonia, Manila, Hong Kong, Singapore, and Batavia, aggregating the results at the Chief or Federal Weather Bureau at Brisbane. Just it is, also, to tender cordial acknowledgments to the various observers, who, as a body, from Cape Leeuwin to Thursday Island, and from Singapore to New Zealand, perform their duties with a readiness and accuracy worthy of the highest praise. The principal meteorological instruments will, as before hinted, be also considered in this publication; and each will be concisely described and standard rules given as to its proper exposure, use, and management. The various types of disturbances, with their technical names, will also be shown, and full explanations given. We shall see the anti-cyclones, or high-pressure systems, which may be likened to atmospheric mountains with their wonderful systems of winds, differing as to direction on all their sides. We shall investigate the depths of the antarctic V-shaped depressions which are as atmospheric valleys—those curious storms which attach to the remarkable belt of low pressure around the antarctic circle. We shall, in mind, accompany some noble vessel, under the influence of such a storm, on her way from the Leeuwin to Gabo, and see the conditions under which the upper topsail yards are sent up to the cheery chanty of "Reuben Ranzo." We shall consider the causes which give rise to the heavy rains and abnormal conditions of eastern Queensland and elsewhere; and, in a word, we shall, as far as time and space will admit, leave no step untrodden in order to make of this almanac a unique success, thereby procuring for it the favour which it undoubtedly deserves at the hands of a generous and sympathetic public. Though giving meteorology the preponderance, we shall endeavour, however, not to be too one-sided. Paragraphs will be devoted to horticultural operations, and to the culture of gardens, which afford so much pure enjoyment to every one who has a soul above the ordinary routine of business. Step by step, as we see the workings of Nature in her various moods, we shall more readily discover that not only ourselves but other forms of life are actually vital sparks of Him whom we may term the "Infinite Dynamo," emanating from and being part and parcel of and inseparable from Him. All sects and creeds can admire the wondrous laws of Nature on this basis, and the more we intelligently study the manifestations of the Infinite Energy, from whom we all sprung, the more do we recognise our tremendous responsibilities and capacity for good, and the more do we regard evil as a negative quantity, and the more enjoyment do we assuredly obtain from life. We shall not forget, in this work, our friends the bush-men, the lonely swag-men, and the teamsters, for whom, as for

all other "white men," we have a profound respect. We shall give them simple rules for ameliorating their condition during times of emergency, as, for instance, when some offensive water-hole affords them the only means of sustaining life. We shall give them simple rules for determining the principal stars, many of which, as the astronomer well knows, are glorious suns, infinitely exceeding our own sun in splendour; and we shall show them how, by consideration of their position, the cardinal points may be determined, and rules laid down which will prevent one lost in the bush from going far astray if he only has presence of mind and the means to support existence. The miner and the surveyor should also find something in this book of interest to them; and, in a word, it will be our constant endeavour, year by year, to so improve this publication as to render it a standard work of reference in popular and practical science to the dwellers in every portion of this Great Southern Land.

CLEMENT L. WRAGGE.

# GEOGRAPHICAL CELEBRATION AT ORAN, ALGERIA.

Société de Géographie et d'Archéologie d'Oran,  
Oran, le 1 Mars, 1898.

## AVIS À ADRESSER AUX SOCIÉTÉS DE GÉOGRAPHIE

### CORRESPONDANTES.

Monsieur le Président,—La Société de Géographie et d'Archéologie d'Oran a l'honneur de vous informer qu'elle célébrera, le 16 avril prochain, sous la présidence de M. le Ministre de l'Instruction publique, ou de son délégué, le vingtenaire de sa fondation. Cette fondation porte le numero 5 dans l'ordre chronologique des Sociétés de Géographie françaises.

Je vous serais très obligé, M. le Président, de porter cet avis à la connaissance des membres de votre Société.

Veuillez agréer, Monsieur le Président, l'assurance de mes sentiments dévoués.

Le Secrétaire Général,

BOUTY.

## UGANDA.

Church Missionary Society,  
Salisbury Square, London, E.C.,  
15th March, 1898.

Dear Mr. Smith,—You will be glad to hear that we have received to-day a telegram from Bishop Tucker, from Mombasa, which, according to a code arranged with him, means that he has received letters at the coast from Uganda with the news that all was well in Uganda as late as February 3rd. Our code would have made it easy for him to tell us of any different news, so that we hope in this telegram he means in very general terms that all has gone well.

We are expecting letters from Uganda within a few days, possibly by the French mail due on the 19th, but more likely by the P. & O. mail due at the end of this week or the beginning of next week; but, of course, letters by

that mail will probably be as much as a month earlier in their date in Uganda than the present telegram.—Yours very faithfully,

F. BAYLIS, Sec. C.S.M.

Communicated by the Rev. F. C. Smith, B.A. (Simisi).

---

The 464th Meeting was held in the Library, on Friday, March 25th, 1898, at 7-30 p.m. Mr. T. DREYDEL in the chair.

The minutes of the last meeting were read and approved.

The election of the following members was announced:—

ORDINARY: Le Secrétaire General Department l'Interior (Etat Ind. du Congo); Messrs. David Q. Henriques, Harry Greaves Bradshaw, William Staner, and J. Benton.

HONORARY: Mr. A. W. Ward, M.A., Litt.D.

CORRESPONDING SOCIETY: Polish Folk-Lore Society, Lemberg.

Presentations were announced. Notices of forthcoming meetings were read.

An address on British Columbia, by the Rev. T. F. NICHOLAS, B.A., of Newcastle-on-Tyne, was given to the Society, illustrated with maps and lantern slides.

Mr. NICHOLAS dealt with the various routes across the continent which will be taken by those proceeding to the goldfields, and slides were shown of the various "gateways" through the mountain ranges of the Western States, including the canons and passes of the Selkirks, Rockies, and Sierras, also views of the Yellowstone and Yosemite Falls, grand canon of the Colorado, etc. The various routes across America having been shown, the lecturer gave some particulars of Alaska. The great prominence now assumed by this region was owing to the discovery of the large deposits of gold in the creeks of the Klondike river. Gold was first discovered in Sitka in 1873, but the honour of the discovery of the present era is shared by the two pioneer prospectors, Richard Harris and Joseph Juneau. They started from Sitka to prospect the mainland coast; on October 4th they located a placer claim, and returned to Sitka with gold valued at 14,000 dollars. The town was named Juneau from one of these successful miners, and from that time until the discovery of the Klondike, in British territory, miners had been steadily pouring into this country from all parts of Canada and America. Slides were shown of the famous Muir glacier, the Chilcoot Pass, the lakes and canons leading to Dawson City, and then the route by water up the Yukon was illustrated, and views shown of the various mines in the Klondike district. As to the merits of the various cities as points of departure, it was scarcely safe to point out any, as in a previous lecture a protest had been raised from the Pacific Coast because one city had not been mentioned. One thing was certain, that the metropolis of the Pacific Coast was San Francisco; it had long been the miners' headquarters; it was, *par excellence*, the wholesale centre for everything, and had long monopolised practically the Yukon trade. The gold brought last summer from the Yukon was coined in her mint; she produced nearly all the food which would be consumed in the mines, beans, dried fruit, etc.; and the great ultimate benefits accruing from the discovery would trend towards the Golden Gate for various reasons. A description was

given of the Muir glacier, which forms one of the great points of attraction to the large and yearly increasing volume of tourist traffic to Alaska; the character of the coast scenery was enlarged upon, with its wealth of colour and solemn stillness, and its similarity to the Norwegian fjords and coastline.

Several questions were asked, and replied to by Mr. Nicholas.

A very hearty vote of thanks was tendered to the Rev. T. F. NICHOLAS for his address on the motion of Lady LEECH, seconded by Dr. WORSWICK.

A large number of letters were read to the meeting, amongst which were letters from:—Dr. Black, S.M.; Mrs. Grafton, Miss Milligan, Rev. Dr. Casartelli, Sir R. Temple, Rev. T. Wakefield, Sir F. Forbes Adam, Rev. J. Innocent, Mrs. Macfarlane, Rev. F. Galpin, Rev. F. C. Smith, Mr. C. Tracy, Mr. J. Lunt, Mr. G. Griffiths, Mrs. Dawkins, Earl Egerton of Tatton, Mr. W. Hodgson, Dr. J. S. Keltie, Principal Hopkinson, Mr. G. T. Bowes, Mr. E. G. Hawke, Mr. J. H. Hall, Mr. J. Crowther, the Vice-Chancellor of Victoria University, Professor Geddes, Alderman Bowes, Captain Greenwood, Mr. B. Carter, Mr. J. S. Reid, Mr. G. E. T. Smithson, Mr. J. E. King.

---

The 465th Meeting of the Society was held in the City Art Gallery, on Monday, March 28th, 1898, at 3 p.m. The Rev. S. A. STEINTHAL, F.R.G.S., in the chair.

The Chairman referred to the pleasure which Sir Richard Temple recently afforded the members of the Society by his eloquent description of Cashmere and the western half of the Himalaya. The vivid remembrance of that address had caused them to anticipate with more than common interest the right hon. baronet's description of the more eastern portion of the Himalayan range and the head waters of the Irawaddy and the Mekong.

The Right Honourable Sir RICHARD TEMPLE, Bart., P.C., G.C.S.I., C.I.E., addressed the Society on "The Upper Waters of the Irawaddy and the Mekong Rivers." This address, which was a continuation of Sir Richard Temple's eloquent description of Cashmere, was given to the Society. (See Vol. XIII., page 181.)

---

## THE ANNUAL MEETING OF THE SOCIETY.

The Annual Meeting of the Society was held in the Library, on Monday, March 28th, 1898, at 12 noon. The Rev. S. STEINTHAL in the chair.

Present: Mr. J. C. Blake, F.R.G.S.; H. Nuttall (Vice-Chair), S. Oppenheim (Hon. Treasurer), Alderman I. Bowes, Lady Leech, Dr. F. Worswick, Mr. C. Behrens, Mr. Isaac Chorlton, Dr. Kelynack, Mr. T. Sowerbutts, Mr. J. D. Wilde, M.A., the Secretary, and others.

The notice calling the meeting was read.

The Minutes of the last Annual and the adjourned Annual Meetings were read and approved.

The SECRETARY then read the Annual Report (for 1897), and the Report of the Victorians for 1897 and 1898, and Mr. T. SOWERBUTTS then read the Balance Sheet, which had been duly audited and signed by the Hon. Auditors.



## GENERAL BALANCE SHEET, DECEMBER 31st, 1897.

LIABILITIES.		ASSETS.	
	£ s. d.		£ s. d.
To Subscriptions paid in advance .....	21 0 0	By Arrears of Members' Subscriptions .....	40 19 0
„ Sundry Accounts outstanding .....	154 8 7	„ Account owing .....	10 0 0
„ Balance, as per Revenue Account .....	44 13 4	„ Cash in hand—	
		Bank .....	£157 0 11
		Secretary .....	12 2 0
			169 2 11
	<u>£220 1 11</u>		
			<u>£220 1 11</u>

NOTE.—The Furniture, Fittings, Books, Maps, &c., in Library, Stock of *Journals*, and Lantern and Slides, are not taken into account as assets in the above statement. There are 29 Life Members, whose subscriptions have been taken as Revenue.

Audited and found correct,

THEODORE GREGORY, F.C.A., } Hon. Auditors.  
WILLIAM ALDRED, F.C.A. }

March 22nd, 1898.

## REVENUE ACCOUNT.

JANUARY 1st TO DECEMBER 31st, 1897.

CR.

## EXPENDITURE.

	£	s.	d.
To Expenses of Meetings.....	154	0	10
" <i>Journal</i> , January, 1896, to June, 1897, less Advertisements and Sales.....	273	3	1
" Rent, Rates, Gas, Water, Insurance.....	105	12	4
" Salaries .....	110	10	0
" Books, Maps, Binding, &c., for Library.....	22	7	4
" Sundry Expenses, Stationery, Postages, Tele- grams, Cleaning, Wages, Coal, &c. ....	73	18	4
" Commission and Expenses on New Members and Collection of Subscriptions .....	9	9	8
	—	—	—
" New Furniture .....	83	8	0
" Balance to General Balance Sheet— From 1895 .....	31	15	6
December 31st, 1896.....	19	16	0
	24	17	4
	—	—	—
	44	13	4

## INCOME.

By Balance from 1896 .....	£	s.	d.
„ Members' Subscriptions for 1897—			
Life .....	63	0	0
Ordinary .....	509	5	0
Associate.....	69	16	6
Societies .....	16	16	0
„ Bank Interest .....	658	17	6
„ Donations—	3	18	5
Mr. Henry Simon, C.E., F.R.G.S.	10	0	0
Mr. C. E. Schwann, M.P.....	2	2	0
„ Nansen Lectures—Balance after Transferring	12	2	0
Lectureship and Furnishing Accounts...	180	16	6

£825 10 5

THE REPORT OF THE PROCEEDINGS OF THE SOCIETY FOR  
THE YEAR 1897.

TO THE COUNCIL OF THE MANCHESTER GEOGRAPHICAL SOCIETY.

Your Royal Highness, My Lords, Ladies and Gentlemen,—The year 1897 has been a most eventful one in the history of this Society.

The great object of the Society, that of using geographical knowledge as a means of aiding the large and increasing population around Manchester to know their position, to enable them to avail themselves of the openings for trade with and of settlement in our great colonial empire and with foreign countries, has been steadily kept in view.

The condition of the Society was never sounder than it is to-day, and for this we are largely indebted to the able work of the Honorary Treasurer. But even the Honorary Treasurer cannot work miracles, and if the work of the Society is even to be maintained, to say nothing of the extension of the work in departments we have not yet touched, we must have a large accession of members.

The work of the Society has been during the year very large. We have had an address from some one nearly every week in the year. More than fifty addresses have been given to the members.

The following is a summary of the principal addresses delivered. But in addition to these addresses we have had a large correspondence (which increases) with persons in all parts of the world. We have also had many short communications of great interest and value.

The principal papers addressed to the Society in 1897:—

## EUROPE.

“Podgers in Norway,” Travel in Unknown Norway. Mr. F. S. Oppenheim, B.A.

The Earthquake in Iceland in 1896. Mr. J. R. Newby.

The Cruise of the Dolfyn in Dutch Waters. Mr. E. W. Mellor, J.P., F.R.G.S.

Dear Old Devon. Mr. Frank Curzon.

The River Danube and the Iron Gates. Alderman I. Bowes.

Visit to Shetland Islands. Mr. E. J. Russell, B.Sc.

The Island of Skye. Mr. W. Lancaster, jun.

Lyonnesse. Mr. J. D. Wilde, M.A.

An Unknown Corner of Yorkshire (Saddleworth). Mr. E. Sowerbutts, F.R.G.S.

On the Track of the Moors in Spain. Mr. S. Wells, F.R.G.S.

The Rhine from Source to Sea. Mr. C. H. Bellamy, F.R.G.S.

Finland. Mr. M. Stirrup, F.G.S.

Visit to Hungary and the Tatras. Mr. J. B. Latham.

## ASIA.

North Borneo. Mr. A. Tucker Wardrop.

Travels in Central Asia. Captain H. J. Coningham, F.R.G.S.

The Island of Cyprus. Professor P. Geddes.

The Central Caucasus. Mr. H. Woolley, F.R.G.S.

The Country of Cashmere. The Right Honourable Sir R. Temple, Bart., G.C.S.I., C.I.E.

Four Years' Travel in Central Asia and Turkestan. Dr. Sven Haden.

## AUSTRALASIA.

The Recent Explorations of Sir W. Macgregor in New Guinea. Mr. J. P. Thomson, F.R.G.S.

ARCTIC.

Within the Arctic Circle with the Eclipse Expedition. Mr. Thomas Weir.  
Recent Expedition to the Arctic Regions. Dr. F. Nansen.  
The Jackson-Harmsworth, Peary, and Andrée Arctic Expeditions. Mr. A. Montefiore Brice, F.G.S.  
In a Norwegian Yacht to latitude 81 deg. 36min. north. Mr. C. Girland, M.Sc. (Vic.).  
Recent Attempts to Reach the North Pole. Mr. G. H. Warren.  
The Story of Nansen (Children's Lecture). Mr. J. D. Wilde, M.A.

OCEANOGRAPHY.

Ocean Rainfall in 1864-75-81. Dr. W. G. Black, F.R.S.E.

GENERAL.

Reception of the Members by the Council.  
The Principles of Map Projection. Mr. J. Howard Reid.  
The Story of Vasco da Gama. Mr. E. Sowerbutts, F.R.G.S.  
John and Sebastian Cabot, their Life and Work. Mr. E. Sowerbutts, F.R.G.S.  
The Missionary Conference.

Addresses by The Rev. S. A. Steinthal, F.R.G.S.  
The Lady Mayoress (Miss Roberts).  
The Very Rev. L. C. Casartelli, M.A., Ph.D.  
Mr. F. B. Shawe, M.R.A.S.  
The Rev. Father Jackson.  
The Rev. Thomas Wakefield, F.R.G.S.  
Mrs. Wakefield.  
The Rev. F. Galpin.  
Mrs. Galpin.  
The Rev. Dr. Swallow.  
Mrs. Swallow.  
The Rev. F. C. Smith, B.A.  
Mrs. F. C. Smith.  
The Rev. W. Vivian, F.R.G.S.  
The Rev. S. Macfarlane, LL.D.  
The Rev. Sewell Macfarlane.  
The Rev. J. Hutcheon, M.A.

The Work of and the Proceedings of the late International Congress of Orientalists in Paris. Very Rev. L. C. Casartelli, M.A., Ph.D.  
The British Association at Toronto. Mr. W. E. Hoyle, M.A.

But in addition to these addresses the Victorians have given more than sixty lectures during the year, which have been addressed to large audiences and have been received with great approval. The work of this body of the members will be dealt with in a separate report, and need not be enlarged upon here; but it is surely in order to refer to their work with the heartiest approbation.

The addresses to the Society of Dr. Nansen, of Dr. Sven Hedin, of Sir Richard Temple, and others have been of a high character, and have done the Society great good.

If the Secretary had not had the serious illness which befel him last year there would probably have been further issues of the Journal.

Four numbers of the Journal were issued in 1897, and the arrears have been so nearly overcome that we hope in 1898 (if funds permit) entirely to overtake the arrears, and to have the Journals up to date in 1899.

The "Geography" has been very much appreciated by the members, and it would perhaps be difficult to discontinue the publication. It was intended that the cost of that monthly issue should be defrayed by advertisements. That, we are sorry to say, has been a failure, and the heavy cost of the publication has to be borne by the ordinary revenue.



The Library has had additional provision made, and the maproom has had two sets of drawers fitted for properly holding the sheet maps of the Society.

The Society is very much indebted to the members, to private persons who are not members of the Society, to corresponding Societies, to our own and to Foreign Governments for large and liberal gifts. The number of them, indeed, is so large as to be a source of embarrassment, for we are now in the enviable position of having larger material than what we know how to dispose of.

We want, in fact, a Library as large again both for the books and meetings, and, if our membership would allow it, a Librarian or a Librarianess who could give a great deal more time to the Library than is possible for the present officers of the Society.

The Excursions of the Society have not been many in number. They were in 1897:—

Peel Park Museum.  
The Gardens of Chomlea.  
The Gardens of Didsbury Priory.  
Sandbach.  
Kinder Scout and the Snake Inn.

An unusual number of members have been assisted in foreign and home travel—Egypt, the Holy Land, Switzerland, France, Germany, Russia, the United States, have all been claimed, and have had small parties of members of the Society, who have in various ways been assisted in their wanderings, and we must put on record the great kindness shown to our members in foreign lands, to whom the Society granted letters of introduction to the officers of corresponding Societies.

The prizes given to the children for replying to questions in Geography were very well earned. The Society helped in Yorkshire, and has promised prizes to the Yorkshire Institutes' Union for 1898.

But the great work in relation to education for this year is the admirable report of Mr. Herbertson, the late lecturer of Geography at Owens College. This report supplements the famous report of Dr. Keltie, and this Society has the honour to be the proposer of this Committee at the British Association Meeting at Ipswich, and bears part of the cost.

The whole question of geographical education must be raised for discussion by this report at the University, in secondary, and in primary schools.

The astonishing variety of text books, exhibiting, indeed, the freedom of our publishers, will have to give way to text books based, not on the vagaries of the writers, but on a scientific and lasting basis.

We are glad to find that Owens College has appointed lecturers or readers in some portions of geography. The great interest of this Society is in the commercial aspect, or, as Mr. Keltie calls it, "applied geography." Before we can have this scientifically-treated geography, the earth and man must be known to those who are to study with profit the application. The historian, the politician, the engineer, and the warrior must have this solid basis. Abroad they have it, scientifically, simply, and completely effective, from the primary school to the university, and nothing less than that can satisfy us.

We are delighted to find the Blackburn Chamber of Commerce have had a commercial embassy to China. The report has not yet been issued; perhaps if it had been more quietly done the results might have been more fruitful. But in any case we give honour to that Chamber for showing a practical way of dealing with the foreign competition to which this country is committed.

We have not done much in the way of providing a Commercial Museum, but we are carefully collecting, and our collection is increasing in value. When the new arrangements for the Society are made, which will be needful in a year or two, this department of the work will not be forgotten.

The work and influence of the Society increases year by year, and it has now arrived at a point in its history which may be made the stepping stone to wider influence and more perfect work.

REPORT OF THE "VICTORIANS" FOR 1897-8.

THE work of this section of the Manchester Geographical Society for the season now completed has been of unusual interest.

It has been found in previous years that a considerable amount of toil has been endured by the "Victorians" which has not in their judgment been profitable.

This year, therefore, with the number of lecturers temporarily more limited, the "Victorians" determined that they would not give more than one or two lectures to societies who were not affiliated with this Society, and that they would decline invitations to places where unsatisfactory conditions have previously prevailed.

These conditions can hardly be explained and can scarcely be understood by those who are not actually engaged in the work.

Two points only need be mentioned—the smallness and quality of the audience provided, and the lack of reasonable attention to the lecturers. A very large number of applications were therefore declined, and the result has been most satisfactory.

The audiences have been larger, and they have contained a larger number of upgrown people.

In almost every case the lecturers have been cordially received, and the sixty lectures have been most beneficial to those hearing them.

The fact that 25 of the lectures dealt with British places shows the growing desire for information about our own dominions.

Nansen claimed nine lectures, which was to be expected after the sensational period of the beginning of 1897. The story of the Nile has been told five times. The widespread character of the work will be seen by reference to the list of engagements completed by the "Victorians" given below:—

1897.

- Sep. 21.—Brooksbottom, "The Story of Nansen."
- Oct. 5.—Oldham, "Naples and Pompeii."
- " 12.—Reddish, "West Wales (Cornwall)."
- " 13.—Radcliffe, "Westward Ho! (Devon and Cornwall)."
- " 19.—Burnley, "The Cruise of the *Dolfijn*."
- " 20.—Rochdale, "The Story of Nansen."
- " 22.—Urmston, "Canada."
- " 25.—Reddish, "India."
- " 25.—Ashton (Albion Sq.), "Madeira."
- " 25.—Leigh, "Australia."
- " 25.—Clayton-le-Moors, "Canada."
- " 25.—Lime Grove, "Map Projection."
- " 27.—Eagley, "The Story of Nansen."
- " 28.—Churnet Street, "Across America."
- Nov. 4.—Mossley, "Switzerland."
- " 8.—Eccles, "The Nile."
- " 8.—Altrincham, "Westward Ho!"
- " 8.—Ashton (Albion Sq.), "The Story of Nansen."
- " 12.—Reddish, "Shetland."
- " 16.—St. John's, "British East Africa."
- " 17.—Winnington, "The Story of Nansen."
- " 22.—Meltham, "Naples and Pompeii."
- " 22.—Reddish, "Old Manchester."
- " 29.—Balfour Club, "British East Africa."
- Dec. 1.—Eccles, "The Rhine."
- " 2.—Rochdale, "The Nile."
- " 3.—Golborne, "The Story of Nansen."
- " 6.—Ashton (Albion), "The Cruise of the *Dolfijn*."
- " 7.—Reddish, "The Rhine."
- " 7.—Criggleston (York), "The Story of Nansen."
- " 8.—Walkden, "Westward Ho!"
- " 13.—Ravensthorpe, "The Story of Nansen."
- " 15.—Winnington, "Rome: Old and New."
- " 20.—Reddish, "British East Africa."

1898.

- Jan. 19.—Winnington, "Naples and Pompeii."  
 „ 25.—Walkden, "Australia."  
 „ 27.—Salford Dock Mission, "Japan."  
 „ 28.—Moston, "Old Manchester."  
 „ 31.—Meltham, "India."  
 Feb. 1.—Gorton, "The Story of Nansen."  
 „ 2.—Frodsham, "The Rocky Mountains."  
 „ 7.—Ashton (Albion), "Australia."  
 „ 10.—Salford Dock Mission, "Shetland."  
 „ 16.—Winnington, "Great Lakes of Central Africa."  
 „ 16.—Walkden, "Canada."  
 „ 16.—Peel Park, "British East Africa."  
 „ 23.—Eccles, "The Story of the Nile."  
 „ 24.—Salford Dock Mission, "Australia."  
 „ 28.—Levenshulme, "Nansen and the North Pole."  
 „ 28.—Clayton-le-Moors, "The Story of the Nile."  
 Mar. 7.—Heywood, "South Africa."  
 „ 8.—Rochdale, "Normandy."  
 „ 8.—Todmorden, "Great Lakes of Central Africa."  
 „ 9.—Dukinfield, "Canada."  
 „ 10.—Mossley, "Australia."  
 „ 14.—Ashton, "West Wales."  
 „ 22.—Hooley Hill, "Story of the Nile."  
 „ 29.—Oldham, "India."  
 „ 29.—Dukinfield, "Madeira."

The other work of the "Victorians" has during the year been somewhat in abeyance. But they are now engaged in the somewhat hard task of analysis, and they hope before this year closes to have completed this work for 1895, 1896, and 1897. When these arrears have been made up other work in connection with the Library will claim their attention.

Some additions have been made to the ranks of the "Victorians," and in the next session they will have more lecturing and literary power.

The photographic work has gone on successfully. Mr. F. J. Payton has placed the "Victorians" and the Society under very great obligation for his able work, which has not been stinted in quantity.

About 300 slides have been added to the stock of lantern slides. The Society bought a set of Nansen's slides and Mr. Herman Woolley has very kindly taken the "Caucasus" slides and renewed this very beautiful set.

Additional photographers have joined the "Victorians," and will in time add to the valuable collection now possessed by the Society.

The stock of slides is now more than 3,000. They have been found most useful in a number of lectures given to the Society and are indispensable for "Victorian" work.

The TREASURER made some remarks on the Balance Sheet, pointing out the need for a larger number of members to enable the Society to continue its work.

The CHAIRMAN moved the adoption of the Report, which was seconded and carried.

The TREASURER moved the adoption of the Balance Sheet, which was seconded by Dr. F. WORSWICK, and carried.

It was resolved that the best thanks of the Society be tendered to the Council and Officers for their services to the Society. Moved by Dr. F. WORSWICK, seconded by Mr. C. BEHRENS, who made some suggestions for the issue of five shilling tickets to the lectures and meetings, and supported by Dr. KELYNACK, who deprecated any reduction in the Journals. The SECRETARY responded, and said the suggestion should be brought before the Council.

The following were then elected to be the Council of the Society for 1898:—

THE  
COUNCIL AND OFFICERS  
OF THE  
MANCHESTER GEOGRAPHICAL SOCIETY  
FOR 1898.

President.

His Royal Highness the DUKE OF YORK., K.G.

Vice-Presidents.

His Eminence CARDINAL VAUGHAN.  
His Grace the DUKE OF DEVONSHIRE, K.G.  
The Right Hon. the EARL OF DERBY, K.G.  
The Right Hon. EARL EGERTON OF TATTON.  
The Right Rev. the LORD BISHOP OF MANCHESTER.  
The Right Hon. the LORD MAYOR OF MANCHESTER.  
His Worship the MAYOR OF ECCLES.  
His Worship the MAYOR OF HEYWOOD.  
His Worship the MAYOR OF OLDHAM.  
His Worship the MAYOR OF SALFORD.  
The VICE-CHANCELLOR of the VICTORIA UNIVERSITY.  
The PRINCIPAL of OWENS COLLEGE  
The Right Rev. MONSIGNOR GADD, V.G.  
The Right Hon. Sir JAMES FERGUSSON, Bart, C.I.E., M.P.  
The Right Hon. A. J. BALFOUR, M.P.  
The Right Hon. JACOB BRIGHT.  
Sir W. H. HOULDSWORTH, Bart., M.P.  
Sir HUMPHREY F. DE TRAFFORD, Bart.  
Sir FRANK FORBES ADAM, C.I.E.

Alderman SIR BOSDIN T. LEECH, J.P.  
Alderman SIR JOSEPH LEIGH, M.P.  
Mr. B. ARMITAGE, J.P., Chomlea.  
Mr. GILBERT BEITH.  
Mr. FREDERIC BURTON.  
The Very Rev. L. C. CASARTELLI, M.A. Ph.D.  
Mr. F. CAWLEY, M.P.  
Professor W. BOYD DAWKINS, M.A., F.R.S.  
Professor T. H. CORE, M.A.  
Mr. W. H. HOLLAND, J.P.  
Mr. HENRY LEE, J.P.  
Mr. WILLIAM MATHER, M.P.  
Mr. SAMUEL OGDEN, J.P.  
Mr. HERBERT PHILIPS, J.P.  
Mr. FRITZ REISS.  
Mr. C. E. SCHWANN, M.P.  
Mr. C. P. SCOTT, M.P.  
Rev. S. A. STEINTHAL, F.R.G.S., *Chairman of the Council.*  
Mr. T. R. WILKINSON, *Vice-Consul for the Ottoman Empire.*  
Mr. F. ZIMMERN.

Trustees.

Mr. Councillor S. H. BROOKS, F.I.Inst.      Mr. SIDNEY L. KEYMER, F.R.G.S.  
Mr. E. W. MELLOR, J.P., F.R.G.S., F.I.Inst.

Honorary Treasurer.

Mr. S. OPPENHEIM, J.P., (Vice-Consul for Austria-Hungary).

Mr. J. E. BALMER, F.R.G.S.  
Mr. C. H. BELLAMY, F.R.G.S.  
Mr. J. C. BLAKE, F.R.G.S., F.I.Inst.  
Mr. Alderman I. Bowes.  
Mr. G. T. BOWES.  
Mr. J. C. CHORLTON.  
Mr. H. T. CROOK, C.E.  
Mr. THOMAS DENTITH.  
The Chevalier R. FROELICH, K.C.I.,  
Italian Consul.  
Mr. Councillor T. HASSALL.  
Mr. N. KOLP.

Mr. J. E. KING, M.A. High Master Manchester Grammar School.  
Lady LEECH.  
Mr. D. A. LITTLE.  
Mr. T. C. MIDDLETON, J.P.  
Mr. HARRY NUTTALL, Vice-Chairman of the Council.  
Mr. R. C. PHILLIPS.  
Mrs. PICKERING.  
Mr. J. THOMPSON.  
Mr. W. ANGELO WADDINGTON.

Honorary Secretaries.

Mr. F. ZIMMERN.      Mr. J. D. WILDE, M.A.  
Mr. J. HOWARD REED.

Honorary Auditors.

Mr. WILLIAM ALDRED, F.C.A.      Mr. THEODORE GREGORY, F.C.A.

Secretary and Editor.

ELI SOWERBUTTS, F.R.G.S., F.I.Inst., 16, St. Mary's Parsonage, Manchester.

Honorary Local Secretaries.

South Manchester and Moss Side, Mr. J. HOWARD REED.  
Oldham, Mr. F. RIGG.  
Lytham, Mr. J. T. LIGHTWOOD.  
Stockport, Mr. T. H. RATHBONE.  
Heywood, Mr. G. FAIRBROTHER.

Leigh, Tyldesley, &c. Mr. J. WARD.  
Urmston and Rixton, Miss A. E. LAW.  
Leeds, Mrs. JESSIE E. SHRIEVE.  
Blackpool and Neighbourhood, Mr. J. RIGBY.  
Ashton and Stalybridge, Mr. C. T. I. GARNER.

\* \* The writers of papers are *alone* responsible for the opinions expressed by them.

Books, Maps, &c., for Notice or Review, may be sent to the Secretary, 16, St. Mary's Parsonage, Manchester.



Thanks to the CHAIRMAN were voted, to which Mr. STEINTHAL responded.

#### ANNUAL DINNER.

The 466th Meeting of the Society, being the occasion of the annual dinner, was held at the Queen's Hotel, on Monday, March 28th, 1898, at 7 p.m. The Rev. S. A. STEINTHAL in the chair.

Among the company present were Sir Richard Temple, Sir Francis Forbes Adam, Dr. Sinclair, Messrs. S. Oppenheim, the Mayor of Heywood (Alderman Healey), Mr. Reuben Spencer, Mr. Councillor Hassall, Alderman Bowes (Salford), Messrs. Harry Nuttall, J. Snaddon, T. Dreydel, J. R. Pickering, F. A. Pickering, E. Sussmann, C. H. Scott, C. H. Scott, jun., J. A. Morris, J. C. Blake, E. W. Mellor, J.P., J. E. Balmer, A. Balmer, D. Q. Henriques, H. Seigler, S. Bramwell, — Fern, C. Collman, G. C. Howorth, — Cooper, Chevalier R. Froelich, Dr. R. T. Williamson, Messrs. F. Mehl, W. Stones, J. Benton, — Goodbehere, J. Howard Reed, F. Zimmern, J. D. Wilde, T. W. Sowerbutts, and others.

The toasts of "The Queen" and "The Royal Family and the Duke of York" (President), were proposed by the CHAIRMAN, who also gave the toast, "The Royal Geographical Societies of Great Britain." Mr. Steintahl gave a cordial welcome to Sir Richard Temple, whom he called upon to respond to the toast. Sir Richard, he said, had done splendid work in India, and they had that afternoon been delighted with the picturesque address he gave them. The Manchester Society, Mr. Steintahl continued, had led to the birth of other societies. Edinburgh was following their example, Newcastle, Southampton, and they hoped soon to see a society in Wales.

Sir RICHARD TEMPLE, in responding, said that in the afternoon he spoke somewhat in riddles about the immediate future. He would now speak just a little plainer, though he would not presume to defend or attack any Government or party, or make any allusions to foreign Powers. But, after all, he must on this last point make one exception. He was bound to say that, while our relations with France and Russia had become more and more strained, our relations recently with Germany had vastly improved. The fact was shown by our partnership with Germany in floating the Chinese loan. That this partnership had alarmed Russia was shown by the precipitation of that Power in regard to Port Arthur. He might make this remark, he thought, without trenching on politics. (Hear, hear.) After all, whatever rivalry or jealousy there might be between the British and German nations, blood was thicker than water. The Germans were our first cousins, and we had fought on many a field side by side with them, but never against them. Therefore we might be thankful that, whatever might happen now with Russia or France, we should have Germany either neutral, or, fortunately, on our side. (Hear, hear.) Without speaking of politics, he thought he might speak of the Emperor of China, who certainly could not speak for himself. He would like to have it out with his Celestial Majesty. (Laughter.) He should say to His Majesty that by his recent proceedings in regard to Port Arthur he had signed his own death warrant, had given away his throne and empire, had sounded the knell of his dynasty. But, after all, what was that dynasty? The Emperor was not Chinese at all, but was a Manchu, coming from Manchuria. He might go back to the place he had given to Russia, for his dominion in China could no longer last now that Russia had this new naval base. China would go on, but with some other sovereign arrangement. Why did not the Emperor consult his old friend the British Government? We, although we had power enough, would never have acted against him, or, at any rate, never in a way that would have tended to break up his dominion. We had stood the Emperor's friend in a way that no other Power had done. And now the Emperor had allowed this thing, without consulting us. We might have put spokes in the wheel of Russia, but the Emperor had foolishly given everything away, and he must take the consequences. We might, or might not, think it worth our while to go to war with Russia about Port Arthur. War was a thing he was not afraid of. He was confident himself that we had power to fight Russia and France together upon this clear ground—that upon any given point in the waters of the world we could more than

match the combination. But war had its horrors, sufferings, and risks, and no Christian man should want to go to war if he could find any possible alternative. He saw other alternatives of a most glorious kind for Queen, country, and empire. If Russia had made her arrangements in Manchuria, well and good. There were ten or fifteen million Manchus, and territories with minerals which, with capital, might be exploited. The exploitation would cost a mighty sum, and Russia had not the money to spare. France, too, would do something in the direction of Tonquin, but nothing very great. Germany would get together five or ten millions of people, taking her hinterland of Kio-chau. But these things were small in comparison with what England could and would do. England should say that at present she had got Shanghai, the greatest commercial situation in all China. We would have a naval station at the mouth of the ocean river, the Yang-tse-Kiang, and a squadron there could hold its own against the united navies of the world. Let it be an open port, but let England be the doorkeeper, with ironclads on either side of the port. We were rapidly getting possession of the railroad on the upper waters of the river. So we had railways at one end and a naval station at the other. And what a river it was! We could send gunboats hundreds of miles up that river and hold it against Orientals or Europeans. And what was the valley? It was the largest, broadest, most fertile, most densely populated valley in the world. Here were a hundred millions of people, every man, woman, and child of whom could be a customer for Lancashire. That was, indeed, something to look at. He said that if England did her best, as he believed she would do, the future might be painted in glowing colours. We should say that the Yangtse-Kiang Valley was within our commercial sphere. Not only would that open the greatest markets of the earth to Lancashire, but also it would confer untold and indescribable benefits on the Chinese themselves. We might not annex the territory or undertake to govern it—that might not be politically expedient—but we must always be ready to hold this great river with our gunboats. So he hoped that from all these troubles England would come out well, as she ought to do, and with the lion's share of the spoil. (Applause.)

Sir FRANK F. ADAM, who moved a vote of thanks to Sir R. Temple for his address, thanked him also for the hint he had thrown out that a peaceful solution was likely to be found for the Chinese difficulty. Amid the perplexity in which the newspapers left them, they had learned, he said, from Sir Richard, first, that the peace was not likely to be broken, and, secondly, that while there was room for Russia to extend her form of civilisation on the north, and for France to extend hers on the south, the great populous valley of the Yangtse, where our commercial interests were greatest, would not even be menaced, because it was known that that valley we would not allow any power to threaten.

The resolution was seconded by the Rev. J. LEIGHTON, rector of Christ Church, Harpurhey, who recalled his experiences of Sir Richard Temple forty years ago, when he himself was an agent of the Church Missionary Society in India and Sir Richard was beginning to link his name with those of the great administrators of British India.

The resolution having been carried by acclamation, Sir RICHARD TEMPLE, adverting to Mr. Leighton's remarks, said he had always been strongly in favour of religious missions, because he believed they did very much to elevate the persons brought under their influence and to illustrate British character, and he was sure that if, under God's providence and through the wisdom and the resolution and the foresight of our statesmen, all the Yangtse Valley from Shanghai should come under British moral influence an era of great blessing would be begun there. It meant that there would be good government for one hundred millions of industrious people, the spread of education, and, above all things else, the introduction of religious knowledge.

Sir FRANK FORBES ADAM proposed "The Manchester Geographical Society," and Mr. H. NUTTALL responded.

The MAYOR OF HEYWOOD proposed "The Trade of Manchester and Salford," Mr. REUBEN SPENCER responding.

The health of the Chairman was proposed by Mr. T. DREYDEL, and was heartily received. The CHAIRMAN responded.

# MANCHESTER GEOGRAPHICAL SOCIETY.

## VICTORIAN LECTURES FOR 1898-9.

A body of gentlemen known as the "VICTORIANS," composed of Members of the Council and other prominent Members of the Society, all Geographical experts, freely *GIVE* their services as Lecturers. This is done with a view of increasing the usefulness of the Society, and to spread reliable Geographical information. The Lectures are given in a popular manner, and have been a valuable educational influence.

### TERMS FOR LECTURES.

The terms upon which these Lectures are delivered are as follows:—

Any Member of the Manchester Geographical Society, or any Affiliated Society, is entitled to make application for "Victorian" Lectures during the Session.

The Lectures must be advertised as by Mr. —, a "Victorian of the Manchester Geographical Society."

The services of the Victorians are *gratuitous*, but to meet the necessary expenses of carrying on the work a small fee for each Lecture is charged, with the Railway Fares, Lantern Hire and Carriage, Hire of Slides, and other special expenses.

Lectures by the Victorians for others than Members, or Affiliated Societies, can only be given sparingly, and will be charged from £2 2s. for each Lecture, with the addition of travelling and lantern expenses.

Any balance left out of these charges, after paying the expenses incurred, is applied to the repair and upkeep of the lantern, and the making of new slides. The Society's Lantern is NOT lent unless a "Victorian" Demonstrator accompanies it.

Applications for Lectures, or for any information, should be made to the Hon. Secretary, "Victorians," at the Offices of the Society, 16, St. Mary's Parsonage.

The "Victorians" will be glad to arrange Lectures, to form a series, for Technical or Continuation Schools.

- 1 The Earth in Space—Astronomical
- 2 Physical Geography
- 3 Water Action shaping the Earth
- 4 Heat and Compression in Mountain Raising
- 5 Landscape Making by Heat, Cold, and other Natural Agents
- 6 Elements of Map Projection
- 7 Political Geography. Map History
- 8 Commercial Geography
- 9 Missionary Geographers
- 10 Obligation of the Science of Geography to the Work of Missionaries
- 11 The Battlefields of Europe
- 12 Tour through Normandy
- 13 The Mediterranean. Comparative Geography
- 14 The Rhine from Source to Sea
- 15 Rambling in Switzerland
- 16 Rambling in Switzerland on Foot
- 17 Naples and Pompeii
- 18 Rome, Old and New
- 19 A Scamper through Italy
- 20 A Cruise in Dutch Waters
- 21 Castile and Arragon (Visit to North Spain)
- 22 Andalusia
- 23 France, North and South
- 24 Venice, "The Queen of the Adriatic"
- 25 Through Sweden by the Gotha Canal
- 26 Madeira and the Canary Islands
- 27 India—Geography
- 28 " —The People, Manners, Customs, and Religion
- 29 " —The Architecture and Antiquities
- 30 " —The "North-West Frontier," and What it Means
- 31 Ceylon, "The Pearl of the East"
- 32 "The Land of the Rising Sun"
- 33 The Far East
- 34 Palestine, Old and New
- 35 British South Africa
- 36 " Central " (Zambesi and Nyassa)

- 37 British East Africa (Mombasa to Victoria Nyanza)
- 38 " West "
- 39 Uganda
- 40 The Great Lakes of Central Africa
- 41 The Commercial Products of Central Africa
- 42 The Discovery and Exploration of the Jongo
- 43 Across Africa from the Congo to Zanzibar
- 44 Egypt
- 45 Canada
- 46 The Great North-West
- 47 British Columbia and the Yukon
- 48 Across the Rocky Mountains
- 49 From New York to San Francisco
- 50 Cuba. The "Pearl of the Antilles"
- 51 From London to Australia by the Suez Canal
- 52 Australia—Discovery and Exploration
- 53 " Developments, Productions, and Present Condition
- 54 " Victoria and New South Wales
- 55 " Queensland and South Australia
- 56 " Western Australia
- 57 New Zealand
- 58 Tasmania
- 59 Polar Explorations—North and South
- 60 Nansen and the North Pole
- 61 Manchester—Historical and Geographical
- 62 Oxford—College and College Life
- 63 A Little Known Corner of Yorkshire
- 64 Westward Ho!
- 65 Devon and Cornwall
- 66 West Wales
- 67 The Scilly Islands. "Lyonnese."
- 68 The English Cathedrals
- 69 The Island of Skye
- 70 The Shetland Islands
- 71 The Western Highlands of Scotland
- 72 The Land of Burns. Scotland's National Poet
- 73 Through Connemara with a Camera

These Subjects are all illustrated with Lantern Slides, but some of them can be illustrated sufficiently with Maps or Diagrams.

Many of the above Lectures can be enlarged and divided into two or more Lectures.



# THE JOURNAL

OF THE

## MANCHESTER GEOGRAPHICAL SOCIETY.

---

### THE GEOGRAPHY OF CHINA.

By CONSUL T. L. BULLOCK, of Chefoo.

[Addressed to the Society, in the Mayor's Parlour, Town Hall, Friday, May 13th, 1898, at 3-0 p.m.]

IN dealing with Chinese geography one must be careful to distinguish between China proper and the much larger Chinese Empire, of which it forms a part. China proper contains eighteen provinces, inhabited by Chinese, governed directly from Peking, on one system and under the same administration. Its area approaches a million and a half square miles, and the number of its inhabitants—a much debated question—cannot be less than three hundred million souls. In all the south-western provinces besides the Chinese there still exist in the recesses of the mountains small tribes, remnants of the aboriginal inhabitants of the land, who retain their own language, dress, and customs, and to a great extent are allowed to govern themselves after their own fashion. The most important of these are the Miao-tse, of Kweichow. Other tribes of them are called Shans, Lolos, Yao, Liao. But little is known of them beyond the fact that they are in no degree Chinese; and I have never met with any satisfactory account of their ethnology.

The Chinese Empire includes, in addition to China, Manchuria, Chinese Tartary or Mongolia, Chinese Turkestan, Kokonor, and Tibet. In none of these countries, except Manchuria, is there any considerable Chinese population. In Manchuria, the greater part of which is well suited for cultivation, the Chinese have established themselves in large numbers, in spite of the restrictions and obstacles at most times placed in their way by the Peking Government. They now far outnumber the original population of Manchus and other Tartar tribes, and exceed them similarly in industry, energy, and intelligence. Only two hundred and fifty years ago the Manchu conquerors drove the Chinese before them like sheep. But now the descendants of that martial race are for the most

VOL. XIV.—Nos. 4-6—APRIL TO JUNE, 1898.



part little better than opium-smoking loafers. The agent which effected their enervation has been hereditary pensions, given nominally as military pay, which rendered it unnecessary for them to work.

The boundaries of the Chinese dominions, for the greater part of their length, are exceedingly well-defined natural lines. At the westernmost extremity of the empire you will find on the map the spot "where three empires meet," the lofty Pamir Plateau, which so well merits its name of "the Roof of the World." From the north-east corner of the plateau springs a mountain range, called the Muz-tag, or the Tien Shan, the latter being a Chinese name meaning "Heaven Mountains," that is to say, the mountains as high as heaven. This lofty chain at first stretches north-east and divides Chinese from Russian Turkestan. Then turning due east it becomes the separating line between Chinese Turkestan and the region known variously as Ili, Kuldja, or Sungaria,\* also subject to China. But in Ili another chain branches off to the north-east. This is the well-known Altai Range, a name to be found on Chinese as well as European maps. The Altai Mountains form, roughly, the boundary between Chinese Tartary and Siberia for the whole distance to the head-waters of the Amoor river. There they pass northward into Russian territory and continue across the continent all the way to Kamskatka, while eastward the Amoor and its tributary, the Ussouri, mark the frontier of Manchuria.

Let us turn again to the Pamirs. From their south-east corner start the Karakorum Mountains and the Himalayas, which divide Chinese Tibet from the British Indian Empire. Further eastward, where China proper and the Chinese Empire have the same frontier, namely, in the part facing Burma, Siam, and Tongking, it is impossible to fix on any natural boundary; and it is almost equally difficult to discover an ethnological one among the medley of tribes scattered along the frontier districts.

The boundary line between China proper and the subject dominions outside is marked in many places almost as distinctly as is the frontier of the empire. In the north, opposite Peking, for instance, on leaving the Great Plain of China one enters a mountain belt running along the frontier, and from fifty to a hundred miles wide. This is still part of China, inhabited by Chinese, and with every available yard of ground carefully cultivated. On reaching the northern edge of this mountain tract, the road mounts a hill of great steepness and length. On arriving at the summit of the hill and looking back, the traveller finds that he is almost on a level with the tops of the mountains through which he has been journeying for the two or three

---

\* Sungaria, the country of the Sungares or Eleuths, includes besides Ili the district of Tarbagatai, to its north.

previous days. But in front, northwards and almost on a level with him, stretches the Mongolian Plateau, covered with short grass and dotted with flocks and herds, the home of the Mongol Tartar, upon which the agricultural Chinese has never perceptibly encroached. On the north-west of China the frontier is the great desert of Shamo or Gobi—the sea of sand, as the name means, where cultivation or colonisation in any form is altogether impossible. In the west of China, towards Tibet, the conditions are something similar to those in the north, though there is not the same definiteness of demarcation. As far as the land is suitable for cultivation the presence of the Chinaman is found; but where the lofty mountain tracts are only fit for grazing cattle, the pastoral Tibetan remains in possession.

It should be noted that neither in the north nor in the west is the natural frontier quite the same as the political. In certain districts, for administrative purposes, the boundary has been moved outwards a few hundred miles, so as to include territory which is not Chinese either in its natural characteristics or in its inhabitants. Moreover, a few years ago the whole of Chinese Turkestan, soon after its reconquest, was established as a nineteenth province, in order that its government might be assimilated to that of China proper, instead of being conducted on the laxer system which prevails in the colonial regions.

The relations of the Chinese to the inferior races with whom they are brought into contact is a question not without interest. I am afraid that in general they are both disliked and feared. It must not be forgotten, however, that in Corea the Chinese have always borne a good name. The Japanese came there, their officials honestly full of well-meant reforms, which they introduced without any tact or wisdom, and their common folk demeaning themselves as bullies and rowdies. In consequence all classes of them are utterly detested there; while the Chinese, who left the Coreans to themselves, neither acting as reformers nor behaving aggressively, are thoroughly esteemed and regretted.

There is one tribe in southern Sechuan not Tibetans, but Lolos—Black Lolos they are called—who in their dealings with the Chinese are certainly more sinning than sinned against. They are a very bold, athletic race, dwelling in the inaccessible fastnesses of the mountains near the Yangtse. From time immemorial, probably ever since Chinese settlers first came into their vicinity, these Lolos have been in the habit of making raids upon them, plundering villages and travellers on the roads, and not merely taking booty, but carrying off men as slaves. Not many years ago a French missionary was captured by them. But they allowed him to escape next day, though without a rag of clothes on, either not considering him worth keeping as a labourer, or thinking that he might be a cause of

trouble. Just before the Japanese war a Chinese army well supplied with modern weapons invaded them successfully, for the first time in history, I believe, and made them promise to be of good behaviour, but I should doubt whether they have kept their word.

In talking about the geography of China one is constantly compelled to mention the names of the various provinces. As I remember well from my own experience, the task of fixing these in the memory appears almost hopeless to the beginner. But these queer-sounding dissyllables are not either meaningless or reasonless; and perhaps the explanations which I can give concerning them will render the retention of some of them a comparatively easy matter. Every one has learnt in his geography at school that Peking is the northern capital and Nanking the southern capital of China. It must not be imagined from this that the two places were ever capitals simultaneously. Well, *king* is the Chinese word for "capital," and *Pei* and *Nan* mean "north" and "south." These two Chinese words, then, you may always remember, or may easily recover if you have lost them. Nearly in the centre of the map of China you will see a province marked Ho-nan. This lies just to the south of the Hoang-ho, or Yellow River. *Ho* is a Chinese word meaning "river." You thus have the Province south of the River. Next, south-west from Ho-nan, you find two adjacent provinces, Hupei and Hunan. *Hu* is a "lake," meaning the great Tungting Lake, which lies between the two provinces. You have thus "North of the Lake" and "South of the Lake" for the next two names. And even if you forget the meaning of *Hu*, the juxtaposition of *Nan* and *Pei* may fix the names in your memory. Next look at the far south-west corner of China, and you will see the great province of Yun-nan. *Nan* of course is "south," and *Yun* refers to the Yun-ling mountains. Yun-nan is south of the Yun-ling. But forget this last part, and only remember that part of the name Yun-nan means south, and the province is in the extreme south of China. Now I must ask you to try to fix in your memories two Chinese words, *Tung* and *Si*, meaning "east" and "west." At the bottom of the map you will see side by side two provinces, Kwang-tung and Kwang-si, *i.e.*, the Eastern Kwang Province and the Western Kwang Province. I may note that "Canton," which is the name we (not the Chinese) give to the chief city of Kwang-tung, is only the word "Kwang-tung" itself, with the asperities rubbed off. In the north-east of China, again, you will note the province of Shan-tung, a name which German enterprise has made familiar to us. A little to the west of it, not quite touching, is Shan-si. Thus you have the eastern and the western *Shan* Provinces. *Shan* means mountains, but you may forget that. Further west you will



find Shen-si. Only try to remember that this is a western province with the word "west" in it. Again, every one knows the word *kiang*, the last word in the name Yang-tse-kiang. Like *Ho* it means "river." Kiang-su is the name of the province at the mouth of the Yang-tse-Kiang. *Su* comes from Soochow (or Suchow), one of the most famous cities in China, near the mouth of the river. Further inland one finds Kiang-si (*si*=west), the western Yang-tse-Kiang Province. Again, south of Kiang-su we have Che-kiang. This is another Kiang Province, near the mouth of the Yang-tse. South of Che-kiang comes Fu-kien. You may write Fu- or Foo-, according as you wish to spell scientifically or after ordinary English pronunciation; but remember that it is the province which has Foochow for its capital, a city which every one should know as being the greatest tea market in China. Thus you require to remember the words *Pei*, *Nan*, *Ho*, *Kiang*, *Tung*, *Si*. and for the four first of these you have easy clues. I will say nothing as to the remaining five provinces, as I cannot give any easy way of remembering them.\*

It is well to be roughly acquainted with the river systems of China. The whole of Central China is drained by the mighty Yang-tse-Kiang and its affluents. One may get an idea of the magnitude of this river from the fact that at the treaty port of Hankow, six hundred miles from its mouth, it is still a mile wide, and even at the end of the winter, the season of the year when it is lowest, the whole of its bed is covered. Its banks are high enough to allow a rise of about 40ft. before the stream reaches the level of the plain; yet floods in summer are by no means of rare occurrence. In one of the two summers which I spent there I was obliged for some weeks to go to my office in a boat, as the whole settlement was under water; and in the case of many houses the boats were moored not to the doorsteps but to the railings of the staircase inside, for even the ground floor rooms were in the water.

The Yang-tse rises in Tibet in the Tang-la Mountains. No European, I believe, has ever actually seen its sources, but the courageous American traveller, Mr. Rockhill, passed very near them, crossing the head-waters where they were but very small streams. After flowing nearly east for six or seven hundred miles, it makes a turn south, and forms what is the administrative frontier between Tibet and the province of Szechuan. The natural frontier is a couple of hundred miles further east. Having passed into Yunnan it describes a short curve to the north again, and then runs eastward to the ocean near Shanghai.

---

\* These are *Chihli*=Metropolitan Province.

*Anhui*, from two important towns in it, Anking (or Ganking) and Hui-chow.

*Kansu*, from the cities Kan-chow and Su-chow.

*Szechuan*=Four Streams.

*Kwei-chow*, probably from its capital, Kwei-yang.



In Sechuan it receives from the north the waters of four large tributaries. Hence the name of the province, which means "the Four Streams." Eastward of Sechuan it is joined by one very important affluent, the Han river, which comes into it from the north-west at Hankow. "Hankow" means the "mouth of the Han." There is no harbour in the world where one may see so many craft as at Hankow. Anchored in several rows they reach for miles along the river banks. They are of every shape and size and come from half the provinces of China.

On its south side the Yangtse communicates with two great lakes, the Tungting and the Poyang. Through each of these it is increased by the contributions of several considerable rivers which empty themselves into the lakes. The lakes perform another useful office. When the Yangtse is high it pours a portion of its flood into these great reservoirs, thus relieving the strain on its own banks and channel.

During the summer months the Yangtse is navigable for the very largest vessels as far as Hankow, six hundred miles from the sea. In the autumn and winter the water falls gradually, until for a week or two at the end of the winter there is sometimes as little as 10ft. of water at one or two points. After that the river rises rapidly again. From Hankow to Ichang, another four hundred miles, small sea-going vessels can pass during the summer; and for the rest of the year there is depth enough for river steamers, capable of carrying a very considerable quantity of cargo. Above Ichang commence the rapids. It has long been a disputed point whether steamers can be made to ascend the rapids or not. By the most recent newspapers we learn that a steam launch has just succeeded in accomplishing the feat. But it remains to be seen whether larger vessels will be able to pass up and down with enough safety to make their employment commercially practicable. In any case there should be plenty of useful occupation for them in the long stretch of smooth water between the last rapid and the port of Chungking, the commercial emporium of the province of Sechuan.

The Han river, though only a tributary, is navigable for a great distance. The furthest point to which small cargo-boats can ascend is computed by the boatmen to be distant from Hankow twelve hundred miles. This, of course, includes the windings of the river.

The river next in importance to the Yangtse is the Hoang Ho, or Yellow River (the English name being the translation of the Chinese one). It rises in the half Tibetan, half Mongol district, known variously as Kokonor, Tsaidam or Tsing-hai, and falls into the Gulf of Pechili. Its course is in the main parallel to that of the Yangtse, and it drains all China north of the basin of the Yangtse except the Province of Chihli and a small portion of Shansi. Notice should be taken of the great

loop to the north which it makes in its middle course, into the country of the Ortous tribe in Mongolia. It derives its name from the yellow colour of its water, which colour is caused by the quantity of loess earth contained in it. I shall have something to say shortly concerning the loess, and I will defer my remaining notes on the Yellow River till after that.

The third great river of China is the West River of Canton. This takes its rise in the Yunnan, and flows eastward in two parallel streams, which unite near the frontier of the Canton province. The northern branch is the larger, but is unnavigable for almost the whole of its course. By the southern branch small boats from Canton can pass right to the frontier of Yunnan. Nanning, of which something has been heard lately, is on the south bank of the last mentioned branch. The opening of it as a treaty port was proposed at the same time as that of Ta-lien-wan. But as the river's channel is obstructed by rapids a long way below Nanning, it is very doubtful if that city could ever be reached by ordinary steamers.

The new treaty port of Wuchou lies a little below the point where the two branches join. From there to the sea the West River is a truly noble stream. The new port is in the best situation possible for bringing the province of Kuangsi into commercial intercourse with foreign nations. It is in a far better position than Nanning.

One other river deserves to be noticed. This is the Huai, which lies between the Yangtse and the Yellow River. It is a commercial route of considerable importance, affording means of access to the important province of Honan. A curious point in connection with it is that it has now no regular access to the sea. Its old mouth, close to the Hung-tsê Lake, in Northern Kiangsu, appears to have been entirely closed; and it finds its way down the Grand Canal to the Yangtse at Chinkiang. In flood time, however, its water is let out through sluices in the numberless channels between the Grand Canal and the sea.

The waterways of China are of immeasurable importance to her, for it has been estimated that land carriage for goods in China even by the cheapest methods, mile for mile, costs twenty times as much as carriage by water. This will be different when railways have been constructed throughout the country. But however many may be the railroads, there will always be plenty of work left for the boatmen.

As regards climate and products, China may be divided into three great zones or sections, which correspond roughly with the valleys of the three principal rivers. The most northerly of these is the region of the Yellow River, and the small portion of the country to the north-east of it. The second is the valley of the Yangtse, that is to say, the districts drained by that river and its affluents. The third is all China south of this, namely,

the valley of the Canton River, with the rest of the Canton province and Fukien.

Now the central and the southern section both enjoy a moist climate. I use the word "enjoy," as the moisture greatly increases their fertility; but the damp heat is extremely trying to the European sojourner in the land, causing him discomfort and, what is more serious, sapping his strength and vitality. Moisture and warmth being present in sufficient quantity, rice is the principal product in both sections. The two zones, however, differ in the fact that in the valley of the Yangtse frost and snow are of ordinary occurrence in winter, while in the southern section they are almost unknown. It is narrated that once, when snow fell at Canton, the people tried to keep it as a curiosity. Accordingly, in the Canton region, we find tropical fruits—the pine-apple, lichee, pummelo, and so on—while in the valley of the Yangtse there are those of the temperate zone.

In North China, from the valley of the Yellow River northwards, the climatic conditions are very different. There is a short, very hot summer, followed by a most severe winter; and the atmosphere is extremely dry during most of the year, no rain worth mentioning falling there except in the summer months. Rice as a crop is almost unknown, and is replaced by wheat, millet, maize, and sorghum. The fruits of the north are the same as those of south Europe, with the addition of the persimmon. This last is a queer-looking, angular fruit, about the size and colour of an orange, with a very sweet and rather cloying pulp, reminding one of inferior apricot jam.

The sweet potato ranges through all three sections. So does cotton; but it flourishes best in Central China. The tea plant does equally well in the southern and the central zone. The frequently severe frosts of the Yangtse Valley have no ill effect on it. Some of the very best teas of China are grown in that region. But the prolonged winter of North China is more than it can endure; so that it is never seen there, either wild or in cultivation. The production of silk depends on the mulberry tree. This gives forth its crops of leaves more copiously in a moist climate; and therefore most of the Chinese silk comes from the two southern zones. But a certain quantity is made as far north as Shantung. Before the introduction of cotton into China, silk was an article much more needed than it is now; and it was then largely cultivated through the whole breadth of North China. At the present day the people of that region protect themselves against the winter cold by dresses of strong cotton cloth thickly wadded with cotton wool; and warm clothing is a necessity, as the houses are but little warmed with fires. The rich indulge in furs; men much exposed to the weather wear sheepskins; but the ordinary dress is cotton.



The general adoption of the use of cotton six or seven centuries ago must have rendered the means of living so much easier throughout a great part of China, that one may largely ascribe to it the increase of population which has taken place in China in modern times.

A few minutes ago, when speaking of the Yellow River, I mentioned the word "loess." I will now give some explanation concerning it.

The loess is a yellow earth which occurs throughout a wide extent of country in North China. The name is German, and is applied in Germany to a certain yellow earth which exists there, and which has been produced either by fresh water or by glacial action. What is called loess in China, though resembling that of Germany in appearance, is very different really both in character and in origin. If a fragment of this earth is rubbed between the finger and thumb, it is so impalpable that it vanishes into the pores of the skin, leaving only a few grains of minute sand. It is extremely porous, and a lump on examination will be seen to be full of minute holes, lined with carbonate of lime. The holes are always perpendicular in their direction and not horizontal.

The part of North China where loess is found most extensively is southern Shansi, Shensi, and northern Honan. Westward it occurs plentifully in Kansu, but not in the more southern province of Sechuan. Eastward, it is seen in Chihli and Shantung, and traces of it have been discovered in the neighbourhood of Moukden, the capital of southern Manchuria. It does not exist anywhere on the Great Plain, and, indeed, for reasons which will be made plain presently, it could not possibly be found there. But in the neighbourhood of Chinkiang on the southern edge of the plain, where an area of hills crops up, it may be seen again in noticeable quantities. In southern Shansi and in Shensi, the deposits of it are often of great thickness. Though sometimes only ten feet deep, it is constantly five hundred, and not unfrequently more than a thousand. One plateau is mentioned 6,000ft. high, which has a covering of loess 1,200ft. thick. Many ranges of hills have their lower parts entirely buried in it, and only the highest points are visible as they rise above its level.

One special peculiarity of the loess is its tendency to vertical cleavages, and its extreme tenacity in other respects. If the base of a mass of loess be eroded by water, the portion above the erosion flakes off and falls in, leaving a perpendicular face. When this occurs on both sides of it, the mass will literally be reduced to the thickness of a brick wall before the last fragments give way. Loess, generally speaking, is certainly not stratified, but there apparently occur in it horizontal faults at intervals, in consequence of which the cleavage goes down to



these faults, and there stops. Therefore, when a great depth of loess, say a thousand feet, is cut through by water—and it always is water that is the agent in such cases—the crevice at the bottom will be perhaps only a few feet broad, but it widens out by a series of terraces, like gigantic steps, so that it may be a quarter of a mile, or twice that, in width at the top. The steps or terraces vary in height from 20ft. to 200ft. in each, and sometimes, especially in the case of the lowest step, are as high as 500ft.

The cart roads in Shansi are described as usually winding along between terraced walls of this kind. The traveller who ventures to leave his vehicle to explore the terraces, will have great difficulty in regaining it. Incautious people who have done this, have sometimes been obliged to retrace their steps for miles. And there are a few points where it is dangerous for a cart to travel in stormy weather, for when a violent down-pour occurs, the trough-like road fills up immediately, and its perpendicular sides give no possibility of escape.

As will be readily understood, wherever such a gigantic canyon as I have described occurs, there will be subsidiary ravines joining it at intervals from the sides, and these again ramify into smaller ones, beginning at a higher level, but each containing a watercourse and walled with terraces, until at last the top of the plateau is reached. If one looks at a loess plateau from the top of a distant peak, the ravines do not catch the eye, and there appears to be a gently sloping plain, easily traversable in all directions. But on approaching one finds it utterly impossible to proceed for any distance except by following the watercourses.

The loess is extremely fertile, and breaks easily under the plough. It is of course the better for the application of manure, though it gives a good return without. But the very porous nature of the loess renders a fair supply of water a *sine quâ non* for the husbandman. Unless there be an adequate rainfall, a failure of the crop is certain. Not to speak of the period when the corn is growing, if the ground be too dry at seed-time, the wind blows the covering of earth away, and the grains, being left exposed, will perish. The loess country has therefore been the scene of terrible famines. I will return to this point a little further on.

There is another curious matter to be noticed with regard to the loess. The traveller standing on some spot which commands a view of the fertile fields, may notice that there is not a single human habitation in view. He approaches nearer, and discovers a large population, like bees at the mouth of a hive, running in and out of little doors in the terrace walls. The people have carved their houses out of the loess itself. These cave-dwellings form most comfortable habitations. They are

lined inside with cement, and are well lighted by windows cut in the walls. They are cool in summer, warm in winter, and are very durable, lasting as much as five or six generations.

But there is nothing connected with the loess so strange as the manner in which it was formed. How came this mantle of yellow earth to be spread over North China, in places as much as 1,200ft. thick, and found throughout an area of at least 250,000 square miles? Glacial action would obviously be incapable of producing such results. Again, fresh water lakes could not possibly have covered this area. It has been argued that loess is a marine deposit. But for this to be possible one would have to admit that Northern Asia was buried in very recent times at least 6,000ft. below the sea; and geologists have plenty of reasons for saying that such could not have been the case. Moreover the loess, though containing numerous land shells, has in it no marine or fresh water remains of any kind. In short, there appears to be no tenable theory as to its origin, except that put forward by the distinguished traveller and geologist, Baron Richthofen, who tells us that it is a "sub-aerial formation"—that is to say, that it was brought from Central Asia by the wind in the form of dust. This is an explanation which rather takes one's breath away at the first moment, but one's mind gradually becomes accustomed to it. Certainly it ought not to present any great difficulty to those who, like myself, have lived in North China, and remember the violence and denseness of dust-storms there, the striking alternations of heat and cold, and the excessive dryness prevailing during the greater part of the year. In Central Asia at the present day these conditions exist in a still more marked degree. One has only to imagine a period of somewhat greater aridity than at present, with a prevailing wind from the north-west, during the dry season of the year. This being granted, what is, geologically speaking, a very short period, would be sufficient to bury the country under a thousand feet of sand.

The minute holes by which the loess is perforated were made by the roots of plants growing on the surface of the soil. As the surface was elevated by the added dust, new plants grew on the top, and the lower ones died away. Afterwards their roots decayed, leaving the minute quantity of carbonate of lime, which has been described as lining the tubes.

As I have said, the loess country is occasionally the scene of grievous famines. In the year 1878 occurred one which is believed to be the most terrible ever recorded in any country of the world. Southern Shansi was the principal scene of its horrors, but northern Shansi, and parts of Shensi, Honan, Shantung, and Chihli also suffered severely. Insufficient rain had caused a partial failure of the crops for four years previously, and in 1878 there was no rain and no harvest at all. Great

efforts were made at the last to introduce supplies, but it was impossible to do this to a sufficient extent. Through a wide extent of country the roads are only traversable by pack animals, and as there was not a morsel of food in the land, the beasts which carried the grain consumed a large part of it before reaching their destination. A low estimate placed the number of deaths at ten millions. In North China there is but little rain or snow in autumn, winter, and spring. What does fall then comes with an easterly wind, but the clouds which furnish the great rains of summer are borne on the regular southern monsoon. In years when the monsoon does not blow with force enough to reach North China properly, there is sure to be a deficiency in the water supply. This was markedly the case in 1878. That year the clouds, failing to reach the north, poured their contents in unusual quantities over Central China, which suffered from floods, while the north was enduring its fearful drought.

It is time that I should say something on the mountain systems of China. In that country everything is different to what it is in England, and the surface of the land is no exception to the rule. In England, as in France, the general character of the ground is undulating, gently sloping up and down as hill and vale alternate. In China one finds everywhere either mountains and steep-sided hills, or else alluvial plains, as flat as the Lincolnshire fens. When speaking of steep-sided hills I do not mean that they are necessarily of great height. In some places wide stretches of them are quite low; but their slopes are too steep for cultivation, and can only be crossed by vehicles at special passes. Parts of the loess country are undulating; but nothing can be less like England than these upland stretches seamed, as I have described to you, by gigantic, terraced ravines. On the Mongolian plateau, north of Peking, I have journeyed for days without either encountering a steep hill or traversing a piece of really flat ground. But in China I have travelled in many parts, and never but once did I come upon a few square miles of undulating country.

I spoke at the beginning of this lecture of the great mountain ranges issuing from the Pamir plateau. There is one more chain, a very remarkable one, which starts, like the Karakorums, from the south-east corner of the plateau. This is the Kun-lun Range, which runs across Asia in an easterly direction, separating Tibet on the south from Chinese Turkestan and the Gobi Desert on the north. Very little is known by geographers of the western part of this chain, perhaps less than of any great tract in the world outside the Arctic regions. If one compares the maps of Central Asia in the most recent editions of the best atlases, one will see how geographers differ in their views concerning the Kun-lun Mountains. It seems certain, however,



that a great branch is thrown off to the northward, probably about in longitude  $83^{\circ}$ . For the first part of its course it is called the Altyn Tag. Further east, under other names, it passes north of the Yellow River, just above the great loop, and continues across Mongolia into Manchuria.

The main chain, with which we are more immediately concerned, maintains its eastward course into the southern part of Kokonor. Here it breaks up into several ranges.

One range goes on through southern Kansu, across Shensi, running close by the great bend of the Yellow River into central Honan. I shall refer again to this very shortly. Afterwards it bends south, then goes east again, becoming the frontier of Hupei and running nearly across Anhui, south of the valley of the Huai River.

An offshoot is given off from this range in Kansu towards the north-east. It traverses northern Shensi, and, crossing the Yellow River, runs through northern Shansi and Chihli to the top of the Gulf of Pechili. This is the frontier line between China and Mongolia, and marks approximately the line of the Great Wall.

A third range, to the south of the first one, forms the northern frontier of Sechuan and passes into Hupei, between the Yangtse and its tributary the Han.

But a greater chain than any of these, the Yun-ling, runs southward to the west of the Ya-lung river, forming the true frontier of Sechuan on the Tibetan side. It crosses the Yangtse near that river's most southern point. In Yunnan it turns eastward, dividing the basin of the Yangtse from that of the Canton rivers. Crossing Kwei-chow and southern Hunan it marks the frontiers of Kwangtung and Fukien, and it finally reaches the sea in Chekiang. But geographers tell us that it does not end even there; it reappears, they say, in southern Japan. On its north side it throws out two important spurs. One passes through Kwei-chow, where the frontiers of that province, Hunan and Sechuan, meet, into Hupei, near the treaty port of Ichang; the other forms the division between Hunan and Kiang-si. There is yet another mountain tract that stretches all along the south side of the Canton river to the Gulf of Tongking. There is, I believe, no doubt that this is an off-shoot from the above-mentioned Yun-ling Range, springing from it somewhere in the centre of Yunnan. We shall, then, have accounted for all the principal mountains in China, except those of the Shantung Promontory. And these last are doubtless a reappearance of one of the ranges which we traced to the north of the Yangtse. Thus the whole of the mountain systems of China are connected with the great Kun-lun Range of Central Asia.

There is no very accurate knowledge as to the mineral wealth



contained in the bowels of these different mountains. Washing for gold goes on in a great number of places, but upon a very small scale, the workers being few in number and making very scanty profits. Nothing, I believe, is known of the existence of any valuable reefs of gold-bearing quartz, but it is impossible to say that such may not be discovered. The province of Yunnan is rich in silver and copper. Lead and tin are both scarce, and are regularly imported from other countries. Iron is found and is worked in many different places. But the great hope for the future industrial development of China is in her deposits of coal. Hitherto she has reaped but little profit from them, though they are worked on a small scale in many districts. There are two reasons for this—first, the want of pumps and proper machinery; secondly, the cost of carriage, which prevents the employment of this fuel beyond a very short distance from the mouth of the mines. There are several coalfields which promise to be of great value, but I will only mention one, that underlying a large portion of the province of Shansi. The distinguished geologist, Baron Richthofen, after investigating the district twenty-five years ago, gave it as his opinion that this was the largest coal-field on the face of the globe, and he estimated that it could supply the requirements of the whole world for some thousands of years at the then rate of consumption. But before serious use could be made of it, the building of railways would be an absolute necessity. He further declared that, when the required railways were constructed, the cuttings would run right through the seams, so that coal could be loaded immediately into the trucks and carried straight away.

I mentioned a little while ago how a line of mountains passes close by the great bend of the Yellow River, at the corner where the three Provinces, Shensi, Shansi, and Honan meet. Just at this spot is the well-known Pass of Tung Kuan, which, owing to the configuration of the country, is the most important strategic point in China. The road from Eastern and Central China to the whole of the north-western region, that is to say, to Shensi, Kansu, and beyond, arrives at Tung Kuan, after passing along between the mountains and the south bank of the Yellow River. It is joined here by the great western road from Peking and the north-east, which traverses Shansi in a slanting line, and crosses the river just at the angle. The united road goes on to Si-an Fu, the capital of Shensi, where it divides into two. The southern fork passes over the mountains into Sechuan; the northern turns towards Kansu. The Kansu road traverses the whole length of that province to Su Chou, at the western extremity of the Great Wall. Here it crosses the Desert of Gobi, at this point only 400 miles wide, and goes on through Hami to Chinese Turkestan and the world beyond. It was by this road that Marco Polo, the Venetian, came to China 600

years ago, and that, long before then, communication took place between China on the one side, and Persia and the Roman Empire on the other. And in the future, if ever a railway be constructed, joining China to Europe, south of the Siberian line, it must infallibly follow this track and pierce through the Pass of Tung Kuan. I may add that the word *Shensi* means "West of the mountain pass," and the province of Shensi is so named, because it lies to the west of Tung Kuan.

It must not be imagined that the several mountain ranges, which were described a little way back, are simply long and narrow chains, mere rows of simple peaks. Far from it! With their spurs, their ramifications, and their sub-divisions, they are in many places mountainous tracts several hundred miles in breadth. Indeed, with the valleys of the rivers and the deltas formed by the rivers, they occupy practically the whole area of China.

Where then, it may be asked, does China find its arable land? How does it support its dense population? First, I would reply, the hill sides are often terraced, if it be practicable. Not that this can count for very much. Then the ravines which pierce the mountain sides, and the little valleys between the spurs, afford space for a line of fields, narrow or wide as the case may be. The great rivers, again, usually run through wide alluvial valleys of their own creating and of very great fertility. In the north, wherever the hills are buried in loess, there is a fertile soil on every side. Lastly, there are the deltas of the rivers, which in China are of supreme importance.

In the earlier part of this paper I mentioned, though without dwelling on it, the Great Plain of China. This vast expanse of level ground reaches from Peking on the north, to the Poyang Lake on the south, a distance of 700 miles. Its northern limit may be represented by a line drawn eastward from Peking to the sea. Its southern boundary follows the Yangtse down to the treaty port of Wuhu, and from there stretches in a nearly straight line to Hangchow, the capital of Chekiang. On the east it is bounded by the sea all the way from Hangchow to the latitude of Peking, excepting where it meets the mountainous portion of the province of Shantung. On the west its borderline runs south from Peking, keeping a little to the east of the Shansi frontier, as far as the southern extremity of that province, here it bends a hundred miles or so to the west, and then continues south again to the Yangtse, making a very irregular line, as mountain chains project into it from the west or not. It includes even a good deal of the province of Hupei. Its area is said to be 200,000 square miles, though this appears to me too large an estimate, and its population not less than a 100,000,000 souls. All this tract of country is the joint delta of the Yang-tse-Kiang and the Yellow River, formed from the mud

which the two rivers have brought down and deposited there. But there was, I doubt not, one other powerful agent in its creation. I remarked, it will be remembered, that loess earth is nowhere to be found on the surface of the great plain, though reappearing on its southern edge. The reason of this appears simple. When the loess lands were forming, the great plain was still a portion of the sea, but the dust which settled so thickly on the hills, fell similarly on the face of the water, and assisted the silt of the rivers to turn it into dry ground.

In places an occasional patch of mountain land breaks through the surface of the plain, but everywhere else it is almost absolutely level. One may travel for hundreds of miles without seeing any natural elevation as high as a one-storeyed house. It is all exceedingly fertile, and is skilfully cultivated throughout, except in a few spots where the land is too marshy from want of proper drainage. In years when the seasons are favourable it produces a marvellous quantity of grain.

The Yellow River is pre-eminently the river of the Great Plain, and it presents in some respects very remarkable characteristics. According to Chinese records it has altered its course no less than nine times within the last 2,500 years. It now runs into the Gulf of Pechili, but it has only followed its present channel since the year 1852. Previously to that, for many hundred years, its mouth was in the Yellow Sea south of the province of Shantung. The incurable troubles from which it suffers are primarily caused by its tendency to silt. All the rivers in China are muddy; but the Yellow River is exceptionally turbid, and, as has already been remarked, it derives its name from the quantity of yellow earth with which its waters are charged. For many hundreds of miles it traverses the regions where loess is to be found. The swiftly rolling stream cuts continually into the unresisting soil, which falls into it in large flakes, until its waters become laden with sediment to an almost incredible extent. In the middle part of its course it descends from the high Mongolian plateau. This great change of level gives to it an extraordinary velocity, thus at once increasing its erosive power and preventing the silt from settling. But the lower part of its course is through the perfectly flat lands of the Great Plain. On this account the rapidity of its current is checked, and it begins to deposit the earth which it holds in suspension. There is another point to be noted: it is a river singularly liable to freshets. Floods, when they occur, do an immense amount of damage, because the surrounding country is perfectly flat and consists of fertile, arable land. Hence has arisen the necessity of protecting the country against the river by embankments. But the deposit of silt constantly going on, the bed of the river rises, and the embankments are heightened *pari passu*. To such an extent









was this carried on that, as has been since discovered by travellers, the old bed of the period before 1852 was actually higher than the ground outside. But in a contest such as this of unskilled human labour against the forces of Nature, sooner or later the latter are sure to triumph. Some day, in a time of flood and storm, a breach occurs in the river walls, and the water pouring out upon the flat plain forms a new channel for itself to the sea.

The last great breach occurred in 1887, on the south side, about fifty miles west of Kai-feng Fu, the capital of the Honan Province. The flood poured itself into the valley of the Huai, a river which I mentioned to you above, so that the water of the Yellow River actually reached the sea through the Yangtse. At least a million people were drowned, perhaps several millions of people. The breach in the embankments was 1,200 yards in length, and could not be closed, in spite of the most strenuous efforts, till after the freshets of the following summer. How difficult the task was may be judged from the fact that as the gap was narrowed in the course of the repairs, the out rushing water kept cutting itself a deeper channel, till at the last moment there was a torrent 60ft. deep to be blocked. During the period of the repairs, when the river was low, the whole of its water ran out at the breach, but when freshets came, a portion continued its course along the old channel.

The Yellow River is very little employed for navigation, the obstacles being the swiftness of the current, the sandbanks in the channel, and the stretches of mud along the sides. At places where it is crossed by ferries it appears from the accounts of travellers that the transit often takes as much as half a day.

I just now showed you how a breach in an embankment is enough to carry the water of the Yellow River away to the Yangtse in the far south. I will now mention another fact. In the north of Honan there is a small river, called the Ch'in, which runs southward into the Yellow River. When a serious rise occurs in the Yellow River, the waters of the Ch'in are headed up, so as to become a menace to the neighbourhood. The people of the district are then in the habit of relieving the strain by cutting a short channel to the neighbouring Wei River, which carries the surplus flood to the sea, *viâ* Tientsin, three hundred miles away to the north. I do not think that any facts could be found to demonstrate the character of the Great Plain more simply than these do.

It is to be feared that for some time to come China's relations with foreign powers will absorb all the energy of her government and exhaust all her financial resources. But if ever the day shall arise when she will be able to pay proper attention to home affairs, no problem awaits her of equal importance with the one of dealing with the Yellow River.

## THE RECENT EPIDEMICS OF PLAGUE IN BOMBAY.

By H. M. BIRDWOOD, C.S.I., LL.D., M.A.,

Late Member of Council, Bombay, and formerly one of the Judges of Her Majesty's High Court of Judicature at Bombay, and Vice-Chancellor of the University.

[Paper read before the Geographical Society of Manchester, on Thursday, the 19th May, 1898.]

IT is to the courteous invitation with which I have been honoured by the Geographical Society of Manchester that I owe the opportunity which is afforded me this evening of addressing you on the subject of the recent visitation of plague in Bombay. My sense of the honour is the keener because the society has chosen as our Chairman my distinguished friend, Dr. Ward,—who is your friend also,—and it gives me the sincerest satisfaction, on returning to England after many years of absence, to be thus once more brought into association with him. With Dr. Ward as sponsor, I can with confidence appeal to you for indulgent treatment of all shortcomings in this paper.

At the outset, I would explain, as I explained lately when addressing the Society of Arts in London on the same subject, that there are various questions connected with plague epidemics which can be discussed with profit only by experts in science. I cannot pretend to be an expert at all. But there are many points of view from which the subject can be approached; and an account, though by a layman, of some of those features and incidents of the plague which became generally known in Bombay during the recent epidemics, of the conditions—whether climatic or local or personal—which seem to favour the growth of epidemics, of the measures adopted in Bombay for the repression of the plague, and of the further measures by which it is hoped to prevent outbreaks of plague hereafter, will not, I trust, be uninteresting. In the course of the narrative it will be necessary for me to refer to some technical details which could be better dealt with by a member of the medical profession. As to these I shall be guided mainly by the recorded opinions of experts.

Medical authorities are agreed as to the identity in character of the “bubonic fever” of Bombay with the disease historically known as the plague, and also as to the identity of the highly infectious pneumonic type of the disease, in which the characteristic enlargements of certain glands are not always seen, with the “Black Death” of the fourteenth century, which was, indeed, introduced into Europe from Asia, and not improbably

from an endemic centre of plague in India itself. It infected the whole continent of Europe and most of the outlying islands, and Greenland also; and destroyed, in Europe alone, about 25 millions of human beings,—that is, about one-fourth of the population,—and was succeeded at intervals by numerous epidemics of the same disease, which retreated slowly eastwards towards the close of the seventeenth century; lingering, however, in the south-east corner of Europe, till the present century. The last epidemic of plague in England was in 1665, the year of the Great Plague of London; but sporadic cases were registered in London in most of the following years till 1679. The last great outbreak in France was in 1720. It was believed till lately that, in Africa, the disease had never extended beyond the northern coast belt. Egypt has been the starting point of numerous epidemics which have overrun that tract since the sixth century, just as Turkey was the point of departure for every inroad after the plague area had become narrower in Europe. In Asia, epidemics were most frequent, up to the year 1844, in Syria and Asia Minor. Since 1850, they have occurred in Persia, Arabia and Mesopotamia. At one time, Persia was considered the eastern limit of the plague area in Asia, but this view is no longer possible, as we now have ample evidence of the occurrence of plague at Agra and many other places in India in the seventeenth century. At Bombay, it appeared at intervals from 1689 to 1702. In Central India, it was present from 1813 to 1821, and extended to Rajputana, the Runn of Kutch, certain towns in Guzerat, to Kathiawar and to Sind. In 1836, and again in 1837, it broke out at Pali, in Marwar, and spread to Jodhpore, Meywar and Ajmere. The virulent form of plague known in British Garhwal and Kumaon as *Gola*, or *Phatkya rog*, or *Mahamari*, has probably existed in the hill tracts of India and China from time immemorial. In 1846-47, it found its way to the sources of the Ramganga, and swept away nearly the whole population of a village at a height of 7,000ft. above the sea. It reappeared at intervals at different places in Kumaon and Garhwal till 1894. In 1853 it descended to the plains of the Moradabad district, where it remained during the following year. The plague committed frightful ravages in Yunnan from 1871 to 1873, and was still prevalent there in 1879. The southern slopes of the Himalayas and the mountain valleys of Yunnan are now regarded as endemic centres of plague.\*

---

\* As regards plague foci, Professor Koch records the following observations, in his recent report to the German Public Health Society, on the spread of the bubonic plague in India: "The historically known ways of the spread of the disease prove the existence of a series of geographically independent plague foci. The Mesopotamian one has been known since ancient times. A second focus from which the disease spreads both south-eastwards to China and southwards to India must be presumed to exist in Thibet, and a third at a point in the district of Assin, on the Arabian Coast. I have found a fourth in Kissiva, north of our African colonies. We owe it to the extremely laborious, but also brilliantly successful work of the Army Surgeon Zupitza



Medical authorities have also accepted as conclusive the investigations conducted by Dr. Kitasato and Professor Aoyama of Japan during the Hongkong epidemic of 1894; and Kitasato's "bacillus" is now universally recognised as the essential cause of the plague. The *Bacillus pestis* is classed in the vegetable kingdom under the *Bacteria*, which are among the simplest of living forms, and consist of a single cell, with a limiting membrane. They are found almost everywhere. Some of them are our best friends. Others are the causes of disease in the animal kingdom. The plague bacillus belongs to the group of parasites or disease-producing bacteria which find a home in the bodies of certain animals. It is a little less than  $\frac{1}{25000}$  of an inch in breadth and  $\frac{1}{10000}$  of an inch in length. Its size, however, is not constant. To adopt an illustration used by Dr. Woodhead, it would take about 500 millions of such organisms, laid side by side, to cover a postage stamp. Insignificant, however, as it seems, this minute organism has been so deadly an enemy of the human race that popular as well as scientific interest cannot fail to be aroused in regard to it in the course of any inquiry about the plague. There are questions regarding its manner of life—its individual life, whether on the ground, or in the air, or in the bodies of men—and its social life—in societies which cannot be numbered—questions also as to the conditions which favour its growth and the development of its poisonous power, and as to its methods of attack and the supposed susceptibility to attack of different races and communities, and as to the best means of repelling its attacks, many of which must remain unanswered for the present and until the bacillus and its habits can be studied, not merely when it is captive in the laboratory, but when it is a free agent also. But we can, at all events, note some of the ascertained facts.

Dr. Kitasato has found bacilli in the blood, the swollen glands, and other internal organs of plague patients. He describes them as rods, with rounded ends, which are readily stained by the ordinary aniline dyes, the poles being stained darker than the middle parts, and presenting a capsule, sometimes well marked. They show little movement. They can be cultivated on suitable media; and, when thus growing in a "colony," they can be seen with the naked eye. When grown in beef tea, they make the medium cloudy, and on potatoes they look whitish-grey. Their growth is strong in blood serum at the normal heat of the body. They require oxygen for their

---

that we are now fully informed as to the epidemic there, which has been known for about eight years. There is not the slightest doubt that the disease of the negroes there is both bacteriologically and pathologically the genuine bubonic plague. The country of Kissiva, however, cannot be regarded as the real focus, which must be sought for near Lake Victoria. The cultivation of the banana probably contributes considerably to the spread of the plague bacillus, for the negroes there live exclusively on bananas, the broad leaves of which, a metre high, form such dense groves that neither a breath of air nor a ray of sunshine can penetrate, and they must be regarded as the real breeding places of the plague germ."

growth and multiply by fission—that is, by a lengthening of the cell and its transverse subdivision into two or more cells. Each divided portion is a new plant, which repeats in a few hours the process to which it owes its own existence. Reproduction thus proceeds in a rapid geometrical progression. No spores have as yet been found in plague bacilli.

The magic-lantern slide which will now be exhibited has been prepared from a photograph of bacilli appearing in a magnified section of an infected gland. The photograph is by Dr. Bitter, of Cairo, who was in Bombay during the epidemic of 1896-97.



*From a Photo by]*

*[Dr. Bitter, Cairo.*

Bacilli in an Infected Gland (Magnified).

Dr. Kitasato and Dr. Yersin have found that cultures of bacilli are destroyed in a few hours by a temperature of 136° Fahr., and in a few minutes by a temperature of 212° Fahr. Sir William Robinson says that "its great enemy is the sun." According to Dr. James, it is easily killed by direct sunlight, by heating to a temperature of 140° Fahr., by antiseptics and by weak acids; but it can withstand simple drying for five or six days. "In suitable conditions," says Monsieur Haffkine, "the germs will multiply indefinitely. When the nutritious medium is exhausted, but the bacilli are protected from desiccation or invasion of other growth, they may remain alive for many months, possibly for years. In the ordinary con-

ditions, when exposed to the vicissitudes of the open air, bacilli of plague captured by the bacteriologist die out very rapidly, in about a week at the utmost. Plague epidemics, however, often last for years." He adds that "when the germ is got hold of" it almost dies if the bacteriologist only looks at it. And again: "The germs may rise, like any other dust, in the air, but under these conditions, when surrounded by air and light, they get weakened rapidly and die. In any case, it is so when the bacteriologist keeps them under watch." It is probable that the germ is most actively poisonous "immediately on leaving a diseased body or after an interval of a day or two." There may, however, be germs which require longer periods for acquiring full strength. "This is not known." At present it is supposed that the virulence of the microbe depends "on its previous passage through a susceptible animal or man." The probability of germs retaining their virulence for any length of time while in the air appears to Monsieur Haffkine to be remote. His opinion that the microbe, as scientifically studied in a test tube, "is somehow different from the complex phenomena which determine an epidemic" is, I believe, one that is shared by others who have lately been engaged in scientific research in Bombay.

Dr. Yersin once thought that he had traced plague bacilli in the soil, but he found afterwards that he had been mistaken. Bacilli have not, so far as I know, been found in the ground or in a free state in the air; but from observed facts connected with outbreaks of plague the inference is reasonable that the plague germs exist in the soil and in the air as well as in the bodies of human beings and of certain ground animals, notably rats and mice, in which they are parasitic; and competent authorities find no difficulty in holding that plague is due to the invasion of the body by these poisonous germs.

The plague is defined by Dr. J. F. Payne, the learned president of the Pathological Society of London, as a specific febrile disease, transmissible from the sick to healthy persons, and accompanied usually by buboes and sometimes by carbuncles. Dr. Arnott, in his recent address to the Medico-Chirurgical Society of Glasgow University, classifies plague cases, as observed in Bombay, under four heads: (1) mild cases with buboes; (2) severe cases with buboes; (3) pneumonic plague, with or without buboes; and (4) abdominal plague, resembling typhoid fever. "There are also mild cases—ambulant plague—which seldom come under treatment, but may spread the disease." According to Dr. Payne, the mild plague sometimes precedes and sometimes follows severe epidemics, as on several occasions in Mesopotamia, from 1873 to 1878, and in Astrakan in 1877. This form of the disease is, in Dr. Kitasato's opinion, dependent on the same bacillus as that which produces the severe form, "but in an attenuated or benign phase." In



this opinion Dr. Cantlie concurs. The symptoms of severe plague, as observed in Bombay, vary with the precise type assumed by the disease. According to Dr. Childe, in the form with buboes, the attack is sudden, being often accompanied by rigor at first. Then fever comes on, with bad headache, vomiting, and frequently delirium. The temperature rises to 104° Fahr., or more. The respirations are increased and the pulse is rapid. The face of the patient assumes an anxious expression, and he feels a pain in the groin and under one arm. Later on, a mass of painful glands is seen on the tender spot. Formerly no cases were diagnosed as plague unless there were external "buboes." Dr. Childe describes also the form without buboes, which resembles bronchitis or pneumonia, and is usually fatal within three or four days. The onset is sudden, with rigor, fever, headache, etc. Symptoms of bronchitis or pneumonia then appear, but the patient is much more ill and his fever is much higher than can be explained by the amount of lung disease present. The lymphatic glands are either normal or only slightly enlarged, and there is no pain. This form of the disease is the "pneumonic plague." Dr. Hojel has described some cases of the "abdominal type of plague," which, in their early stages, bear a very strong resemblance to enteric fever, the differential diagnosis being very difficult. Dr. Weir, the Executive Health Officer of the Bombay Municipality, notices the desire to wander, which is sometimes a "strange and pathetic" symptom of the disease. A patient, with a temperature of more than 100°, suddenly leaves his house, and if he has any money he drives to the railway station, with the intention of going to some place by rail, he cannot say why. Dr. Weir noticed this desire to wander in all classes, and it often precedes high fever and delirium. During the epidemics of plague in the Middle Ages, certain black patches on the skin, known in England as "tokens," were considered to be sure precursors of death, and gave rise to the name "Black Death." No such symptoms were, I believe, observed in Bombay, and their absence suggests to Dr. Arnott the probability that typhus and other diseases may have been mixed up with the plague in those epidemics. According to the observations of Dr. Leumann, local inoculation through abrasions, however minute, such as cuts and scratches of the skin, has been the most common method of invasion in plague cases, especially among the poorer classes, who go about, for the most part, bare-footed, and with their arms and legs insufficiently covered. The congestion and enlargement of the lymph glands nearest the point of inoculation indicates an attempt at local resistance. Where the organism attacked resists the micro-organism, the disease remains local, but where the power of resistance of the organism is lowered, or was, from the first, slight, "the bacilli become generalised throughout the body,



reaching the blood either by the lymph channels, or, in some cases, by direct extension into the veins in and around the glands, and producing true septicæmia. Such cases are almost always, if not invariably, fatal." In the pneumonic variety, described by Dr. Childe, the bacilli may be either breathed into the lungs, as in "primary plague pneumonia," or the plague may involve the lungs among other organs, during the course of the septicæmic form, thus producing "secondary plague pneumonia." And thirdly, as Dr. Leumann observes, invasion by absorption from the alimentary canal "is quite a likely mode of invasion, and should not be forgotten as a possible one." Dr. Herbert observes that, in the more fatal septicæmic type of plague, in which there are few or no obviously enlarged glands, the bacillus is found in large numbers in the blood; but in the ordinary bubonic type the blood is not the chief seat of the disease. The members of the Russian Plague Commission in Bombay, Professor Wysokowicz and Dr. Zabolotny, found that in bubonic cases the enlargement of the glands was mostly due to the presence of enormous numbers of bacteria. In primary pneumonic plague the sputum is full of bacilli. These facts show that the microbes multiply after they enter the body. Observation in the hill tracts of northern India favoured the conclusion that the period elapsing between the infection of the patient and the manifestation of plague symptoms is very short. Dr. Hutcheson says that the disease may prove fatal "within 24 to 48 hours after exposure to infection." The period of incubation was supposed at Hongkong to range from two and a half to six days, but in some cases to be as long as nine days. For the purposes of the plague regulations prescribed by the Venice Sanitary Convention of the 19th of March, 1897, the period of incubation is fixed at ten days.

The question of protection against invasion is necessarily of the greatest practical importance. Monsieur Haffkine's prophylactic treatment by inoculation with a fluid serum containing plague germs destroyed by heat and certain products resulting from the process of preparation has been much in favour. Many thousands of persons in Bombay and elsewhere have voluntarily undergone this treatment, and the immunity afforded has been remarkable. I will give one instance only out of many. At Damaun, in the Portuguese territory to the north of Bombay, there were 6,033 persons who were not inoculated, of whom 1,482, or 24·5 per cent, died of plague. Of 2,197 who were inoculated only 36, or 1·6 per cent, died. According to Dr. Herbert, the evidence that has been collected shows that the person inoculated is apparently rendered so resistant to the plague organism that when it is introduced into his system it will fail to multiply, or fail "to take." The time required for producing immunity is shorter than in any

known protective treatment against other diseases, being less than one day; whereas in anti-cholera inoculation it is four days, in vaccination against small-pox seven days, in inoculation against anthrax twelve days, and against rabies fifteen days.

As regards the medical treatment of plague cases, it is perhaps sufficient if I quote the opinion of so competent an authority as Dr. Arnott that no remedy has been discovered which can be relied on. Dr. Childe says that many methods have been tried in Bombay, "but none with certain success."

For the past three centuries the question whether the plague is contagious or not has formed the subject of controversy. Dr. August Hirsch, of Berlin, regards the discussion as closed. There may be a difference of opinion, he says, as to the ways and conditions of communication, but not as to the fact itself. During the Bombay epidemic of 1896-7, opinions were mainly divided on the question whether the plague is highly infectious or only slightly infectious. In the paper which I read before the Society of Arts in February last I adduced some evidence on both sides of this question, as furnished by recent experiences in Bombay and its neighbourhood. I will not go over the same ground now, but will content myself with stating the conclusions of Dr. Childe, who is able from his own observations to express the belief that both parties are right, according to the type of plague under consideration. "In many cases," he says, "the ordinary bubonic form of plague is not particularly infectious, and every one has seen that attendants in such cases, both in hospitals and private houses, do not readily take the disease"; nor, if care be used in the sick room, is the patient likely to convey the disease. With the pneumonic form of plague "the conditions are quite different, for here the patient is freely coughing up and scattering around him what is practically a virulent pure culture of the plague bacillus." This form is highly infectious. Many of these cases, moreover, were not at first recognised as plague at all, so that the usual disinfection was not carried out. Pneumonic cases have thus had a large share in spreading the disease. Dr. Childe thinks it probable that the "Black Death" was really a severe type of the plague pneumonia. According to the Chroniclers, both medical and non-medical, the spitting of blood was one of the commonest phenomena in the course of that disease. The bubonic and pneumonic forms of the disease were both recognised by the natives of Guzerat in 1820, and Dr. Hirsch has no doubt as to the identity of the fatal Pali plague of 1836 (of which, according to Forbes, expectoration of blood was a symptom) with the "Black Death" of the fourteenth century.

Dr. Henderson, of Karachi, thinks that in cases of importation of plague by infected persons the germ requires a period of "local incubation" before attaining its full virulence, and

that the imported infection is not probably strong enough to infect men, but infects rats, and through them the people of the country. The period of local incubation he considers to be the time between the importation of a case and the infection of the rats. Human agency, according to this view, would be the means of importation and rats the disseminating agent. The Plague Commissioners, Drs. Reade and Lowson, also believe that rats convey the disease from place to place, and you may remember that it was lately reported that it was by this agency that the plague had been brought into Calcutta.\*

Dr. Weir has pointed out, however, that the death of rats is not the first phenomenon. It is preceded by a migration of rats, urged possibly by the instinct of safety, and Mr. Logan, the late Collector of Thana, in his report on the measures taken in that district, has described the "Rat's Progress" from south to north, through successive quarters of the town of Bandora, and to villages beyond the limits of the town, which were not infected till the rats brought the plague. Mr. Snow, the Municipal Commissioner of Bombay, in his able report on the epidemic of 1896-7, observes that the presence of rats probably nullifies to an enormous extent the advantages to be derived from ordinary remedies, and points out that the plague in Bombay followed the migration of rats, the course of which was generally from east to west and then northwards, up the sides and centre of the island.

With reference to the question whether a microbe can exist in an infectious condition for any time outside the body of a patient, it appears that a German investigator, working in Japan, has found that it can remain alive in linen for more than a month. The two Goanese servants who were attacked with plague on arriving in London from Bombay, in 1896, were found to have unpacked and worn in London some clothing which they had brought with them. It is supposed that they were thus infected in London, as they were in good health throughout the voyage.

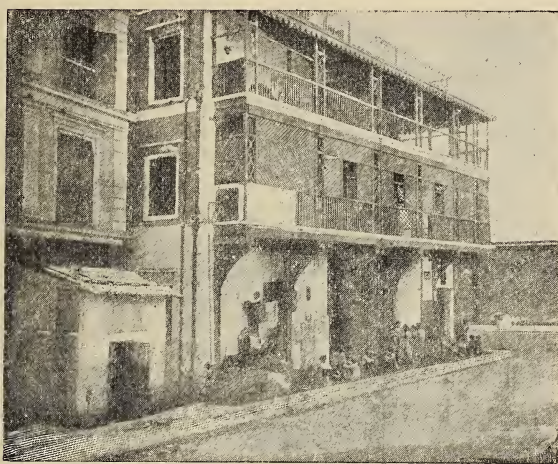
At one time it was believed that the plague was due to poisonous exhalations from corpses, but this theory, though it was supported by the French commissioners who studied the plague in Egypt in 1828, was shown by Dr. Hirsch, more than sixteen years ago, to be untenable. Nor is it possible to hold that the vegetable organism which is now known to be the exciting factor of the disease can be produced spontaneously; nor is it evolved by certain states of the atmosphere, or of the soil or of the animal in whose body it finds a home. Each plague germ has a parent, and if there is an outbreak of plague in any place, the plague germs must have been brought to that

---

\* Professor Koch, in his observations on the spread of bubonic plague in India, says that the death of enormous numbers of rats is regarded as a sure omen of the approach of plague in Africa, India and China. "The plague must, therefore," he adds, "be regarded primarily as a rat disease, and only secondarily as a human one."



place at some time or other before the outbreak. When the germs are brought to a crowded city in which the conditions favourable for their growth are present, they multiply rapidly by the simple process of fission which I have already described. But for the development of the disease the organism must be present. When certain conditions of climate are present also, the disease may become epidemic on almost any soil, in any latitude and at any elevation, if only the community attacked is predisposed by local or personal conditions to yield to its attacks. If the poison of plague is not present, then there can be no plague, even though all the conditions which ordinarily favour the growth of an epidemic, when once the poison has been introduced, be present and abound.



The House in the Mandvi District where the Plague was first discovered, in Bombay, in September, 1896.

It is not possible to trace the circumstances connected with the importation of plague which produced the first Bombay epidemic of 1896-97. It has been variously held that the bacillus was introduced with mouldy grain from Central India, or else by traders from Hongkong, or else by wandering mendicants from a plague centre in Northern India; but nothing is really known as to the time and manner of importation. All that is known is that cases of plague occurred in Bombay in February or March, 1896; that more cases occurred in May and June and July; that these cases were not recognised as plague at the time; that the disease was actually present and spreading in a densely-crowded community for several months before its real character was known or even suspected, and that it established itself unmistakeably as an epidemic from the beginning of



October, 1896. The difficulty of controlling it, in such circumstances, has been compared by Monsieur Haffkine to the difficulty felt in Australia in dealing with the pest of rabbits, and in France with the phylloxera, and in South Africa with the rinderpest. If the first pair of rabbits imported into Australia had been promptly destroyed, there would have been no pest of rabbits, and a similar remark applies to the phylloxera. But the plague bacillus, when once established, was very much harder to deal with, not only on account of its minuteness, but also on account of the rapidity with which it reproduces itself.

I will now compare some of the incidents of the first epidemic of 1896-97 with those of the second epidemic which has been recently raging in Bombay, in reference, more especially, to the conditions or factors which seem to exert an influence on the growth of epidemics of plague.

To explain the re-establishment of an epidemic during the recent cold season, it is not necessary to enquire as to the possible importation of fresh plague germs after the practical cessation of the first epidemic, at the close of April, 1897, for at no subsequent time has Bombay been entirely free from the plague.

I have prepared from the official records of plague cases and plague mortality for the twelve months from October, 1896, to September, 1897, the following statement, in a tabular form, showing the number of seizures and the number of deaths in each month, and the percentage of deaths to seizures in each month:—

Month.	No. of Seizures.	No. of Deaths.	Percentage of Deaths to Seizures.
October, 1896 .....	389	276	70·96
November, „ .....	333	268	80·48
December, „ .....	1,655	1,160	70·09
January, 1897 .....	2,374	1,825	76·87
February, „ .....	3,173	3,072	96·81
March, „ .....	2,495	2,257	90·46
April, „ .....	1,418	1,267	89·35
May, „ .....	448	327	72·99
June, „ .....	182	98	53·84
July, „ .....	62	44	70·96
August, „ .....	124	70	56·45
September, „ .....	221	168	76·01
Total for 12 months.....	12,874	10,832	84·13
			Percentage for 12 months.

This statement shows that, in May, 1897, the number of cases officially registered was reduced to 448 and the number of deaths to 327, as against 1,418 cases and 1,267 deaths in April. In June, the corresponding figures were 182 and 98; and in July, 62 and 44. The minimum was then reached, for in August there were 124 cases and 70 deaths and in September 221 cases and 168 deaths. Now in October, 1897, though the number of deaths officially registered as due to plague was less than in October, 1896, yet the excess of the total mortality from all causes over the normal mortality was much higher; and as, for reasons which I will explain presently, this excess may be safely regarded as representing approximately the actual mortality from plague, it may be held that the plague had once more become epidemic in Bombay in October, 1897; though the commencement of the second epidemic is referred, in some of the returns from Bombay, to a later period. If the plague mortality be deduced in this way, the growth of the plague to the dimensions of an epidemic must be referred in both years to the beginning of the month of October. At this period, in each year, it was clear that cases of plague were no longer merely sporadic. In the four weeks ending on the 27th October, 1896, there were 784 deaths from plague. In the corresponding period of 1897 there were 1,264 deaths.

Though the plague was checked in July, 1897, and though its virulence, as shown by the proportion of deaths to seizures, had been greatly reduced even so early as in May, 1897, yet it was not completely stamped out; and so long as there were any sporadic cases at all, the danger remained; and the mortality in the second epidemic has been very heavy, notwithstanding the thoroughness of the sanitary measures adopted in 1896-97 and up to the present time. In the 30 weeks from the 2nd October, 1897, to the 29th April, 1898, the mortality from plague has amounted to 25,059 deaths. During the corresponding period in 1896-97 it amounted to 20,365. Experience shows that when, on the cessation of an epidemic, the plague lingers in a sporadic form in a crowded population, it may at any time re-appear as a malignant epidemic, if only the conditions favourable for its growth present themselves—and some of these conditions are beyond human control.

Thus, in London, during the period from 1543 to 1679, the presence of plague was recorded in 84 years, but only six of these were characterised by serious epidemics. (See Appendix No. 1.) Three at least of these six years were years of drought; and Mr. Baldwin Latham infers, from a careful examination of mortuary statistics, that when the plague is present, a hot and dry season favours the growth of an epidemic. He finds that the conditions, when measured by the dryness of the air, were identical in the London epidemics and in the Bombay epidemic of 1896-97.

The Hongkong epidemic of 1894 was preceded by an unusual drought, which lasted for seven months. Sanitary operations were carried out with the utmost vigour in Hongkong, but the plague re-appeared early in 1896, on the close of a year in which the rainfall was one half of the average. It would seem that, unless the plague germ can be completely eradicated from any place in which it has established itself, there is always the risk of fresh outbreaks of the disease, even though there may be no fresh importation of the contagion. During the period to which I have referred, the plague mortality in London was, in many years, very low indeed. In the twelve years ending with 1624, it never rose to 40 deaths in any year; and in nine of these years it was below 20. In 1617 it fell to six. In 1624, there were 11 deaths, but in the following year the figure exceeded 44,000. So again, in the 15 years preceding 1665—the year of the Great Plague—the highest mortality in any year was only 36; and in the year immediately preceeding the Great Plague, only six. But this was enough to keep the germ alive and capable of fearful development, in a “hot and dry” autumn, such as that of 1665. Other favouring conditions may also have been present; but the recurrence of the plague in London in years of drought and the circumstances connected with the two outbreaks at Hongkong are significant.

Both as regards the distribution of rainfall and the mean annual temperature, the circumstances of the year 1896 were altogether exceptional in Bombay. The actual rainfall was above the average, but practically the monsoon rains were at an end about the middle of August. From the 19th August to the 29th September, the rainfall was less than  $3\frac{1}{2}$  in., as against an average, for that period, of 13 in. It was a famine year, but in two former famine years, 1876 and 1877, much more rain fell in the month of September than in 1896; and October, 1896, was dry and hot. The mean annual temperature of the year was  $80\cdot7^{\circ}$  Fahr.—the highest temperature on record, except in one year, for 51 years. Such exceptional circumstances may have promoted the rapid development of plague when once the germ had entered the city, undetected, and multiplied for several months.

These abnormal conditions of rainfall and temperature did not repeat themselves in the monsoon and autumn of 1897; but nothing could prevent any ordinary cold season in Bombay from being a dry season, except the prolonged continuation into the cold weather of the south-west monsoon rains to an extent not yet recorded. Till about the middle of April, in every year, a north-east monsoon wind blows steadily throughout the cold weather. As it passes over wide tracts of parched-up land, it is a thoroughly dry wind before it reaches Bombay. If, therefore, there is any force at all in Mr. Baldwin Latham's theory,



the ordinary climatic conditions of a Bombay cold season must always be favourable to the growth of plague, if only the germs are present, whether they have been freshly imported from plague centres or other infected places, or survived in sporadic cases following a previous epidemic.

These climatic conditions are probably similar to those of a dry English autumn. It is shown by the burial returns kept under the orders of Thomas Cromwell, Lord Privy Seal, since the year 1538, and recently examined by Mr. Baldwin Latham, that the plague was always at its worst in the London epidemics in the late summer and autumn months. In 1592, the worst months were July, August, and the first half of September; in 1603, from the middle of July till early in November; in 1605-6, and in the following year, August, September, and October; in 1624-5, from early in June to the end of October; and in 1664-5, from early in July till near the end of November. (See Appendix No. 2.)

Plague seasons have also been noticed elsewhere, as in Syria and Aleppo, Smyrna, Trebizond, and Algiers. In Persia, the season varies in different parts of the country.

Statistics have been preserved of the plague mortality at Alexandria in each of the years from 1834 to 1843, and are noted in Dr. C. Creighton's excellent translation of Dr. August Hirsch's "Handbook." It was found that, in those years, the plague generally became epidemic between October and January and sometimes later. In most years there was a distinct increase of mortality in the month of February. In 1835, March was a month of exceptional mortality, there having been 4,459 deaths, against 951 in February and 2,016 in April. It was observed that the epidemic generally ceased, in each year, at Alexandria, on St. John's Day—the 24th June—and at Cairo, at the summer solstice, the 21st June.

In northern countries, as observed by Dr. Payne, epidemics have generally started in the spring, been most active in August and September, and ceased in winter; but there have been exceptions to this rule. In Moscow, in 1770, and on the Volga, in 1878-79, the plague raged during severe winter weather. In the British districts of Garhwal and Kumaon, in Northern India, where the plague is endemic, or "at home," and in Arabia, no particular association with the seasons has been traced. In Irak, according to Dr. Payne, the plague dies out suddenly in the summer. When the temperature rises above 86° it begins to diminish, and it ceases abruptly at a temperature of 113°. In the Bombay cold season of 1896-97, the temperature ranged, during the months of January, February and March, when the mortality was highest, from 87·6°—the highest limit reached on the 8th January—to 60°, the lowest limit reached on the 26th January. It rarely



exceeded 85° during this period or fell below 65°. The mortality was very high when the temperature was lowest, and fell steadily as the temperature steadily rose from the 1st March to the end of April, as you will see duly recorded in the chart on the screen, which was prepared under the directions of General W. F. Gatacre, late President of the Plague Committee in Bombay. On the 27th April, 1897, the thermometer stood at 93°. In the week ending on that day, the daily mortality from plague was reduced to 10.

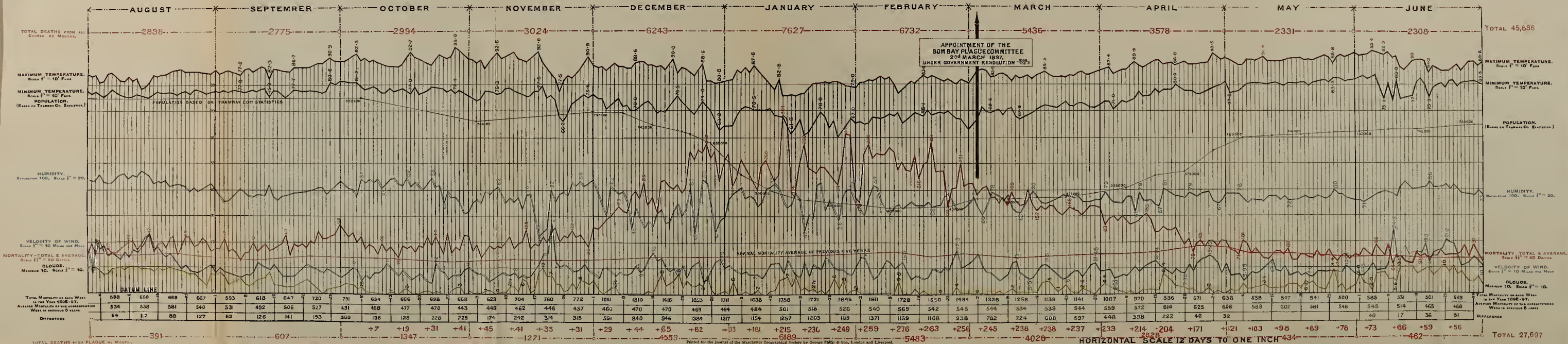
The mortality from plague during the second epidemic at Bombay, while exceeding the mortality of the first epidemic, has yet followed it in such a manner as to suggest the control of seasonal influences. Though the mortality during the present outbreak has been higher, it does not necessarily indicate a higher death-rate in proportion to the population than in 1896-97; for the exodus of inhabitants has not been so large as in that year. But whatever the death-rate may have been, at any time, in either epidemic, the plague has been at its worst in both years in the driest season of the year. Once more the plague has declined, as in 1897, when the season has changed and the dry, north-east monsoon has given place to the south-west monsoon wind, laden with all the vapour which it has absorbed in its passage over the Arabian Sea. This change generally begins about the middle of April, and is completed in the two months which precede the great annual downfall of monsoon rain in June.

It will be instructive to contrast the mortality for corresponding periods of the two epidemics. According to the official registers, the plague mortality for the 30 weeks ending on the 27th April, 1897, amounted to 10,227 deaths, and for the corresponding weeks of the second epidemic to 15,611. These periods respectively represent the duration of the two epidemics. If these periods be divided into successive groups or stages of four weeks each, it appears that, in the first epidemic, the plague, according to the official registers, was at its worst in the fifth and sixth stages, ending respectively on the 16th February and the 16th March, 1897. In the second epidemic it has also, according to the same registers, been at its worst during the corresponding stages, ending respectively on the 18th February and 18th March of the present year. The result is somewhat different according to the preferable method of computation, based on the total mortality from all causes, to which I have already referred. The official method of registration is admittedly defective. It is certain that at one time many deaths from plague of one type or another were not recorded as such. In all plague epidemics there are cases in which death occurs very rapidly, without some of the symptoms which are generally regarded as characteristic. Cases of the

# BOMBAY PLAGUE VISITATION OF 1896-97.

DIAGRAM SHOWING MORTALITY AGAINST TEMPERATURE, HUMIDITY, WIND, VELOCITY, AND CLOUD.

ADAPTED FROM A DIAGRAM PREPARED BY GENERAL GATAORE'S COMMITTEE.

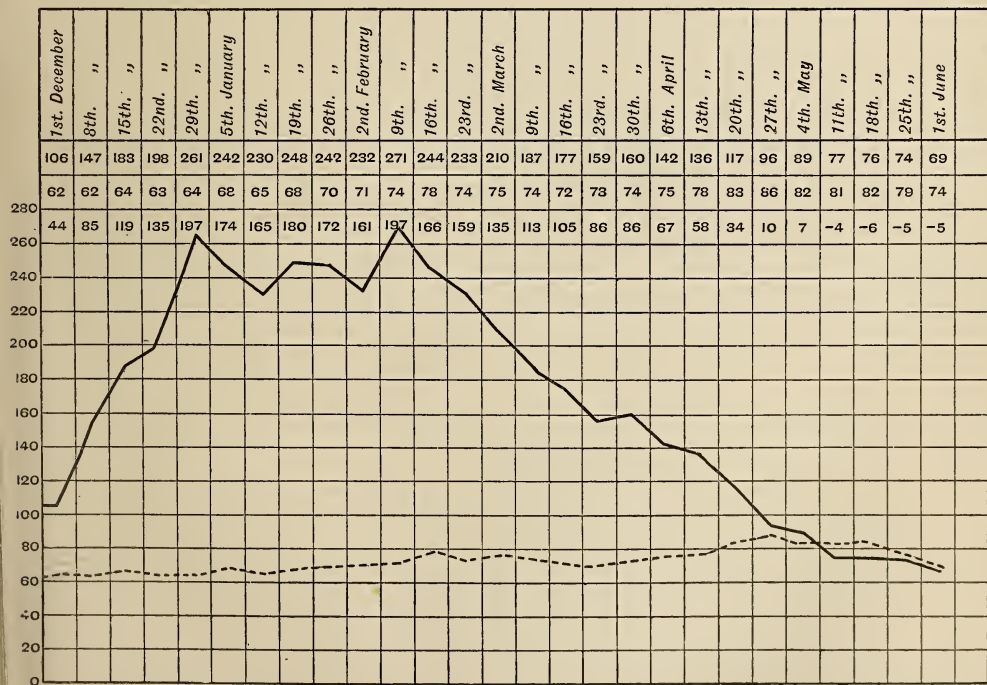
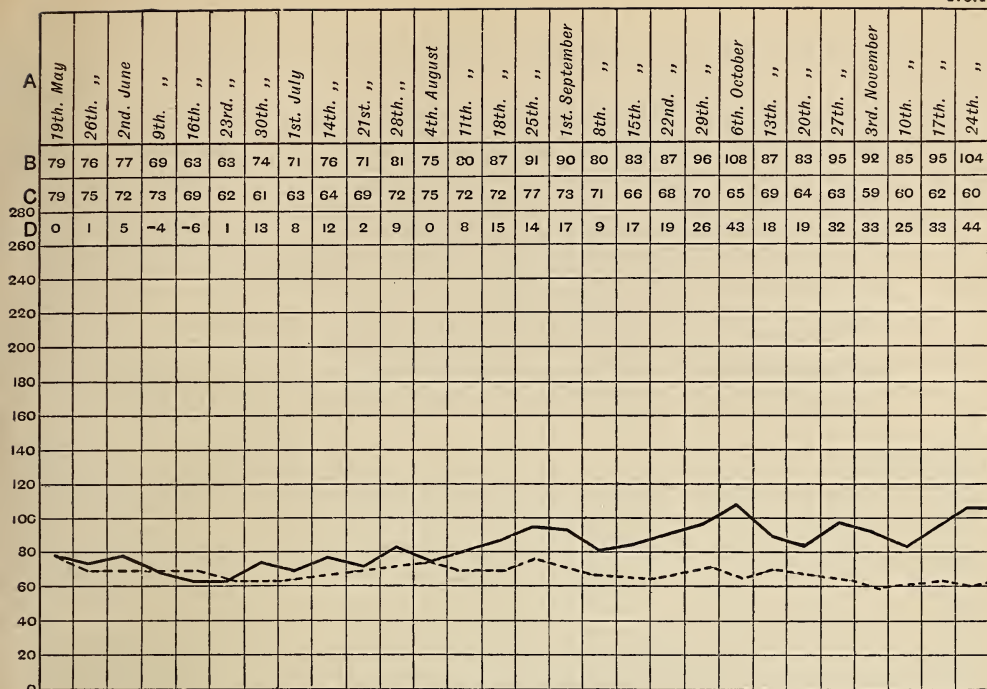


NOTE (by General Gataore's Committee).—Red Figures represent the Difference between the Average Death Rate based on a Population of 850,000 and a varying Population, and must be added for Plague.

Printed for the Journal of the Manchester Geographical Society by George Philip & Son, London and Liverpool.





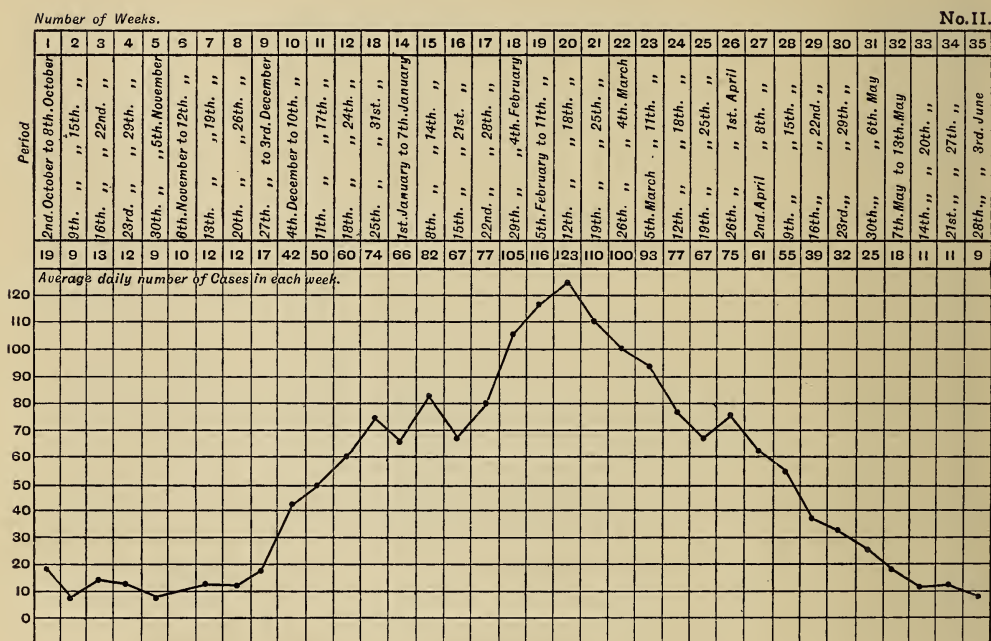


NOTE.—In this chart the figures in line B indicate the daily average mortality, from all causes, in each of the weeks indicated in the headings of columns (marked A)—that is, in each week from the week ending on the 19th May, 1896, to the week ending on the 1st June, 1897. The figures in line C indicate the daily average mortality, from all causes, in each of the corresponding weeks in the preceding five years; and the figures in line D represent the excess of the daily averages for 1896-97 over the normal daily averages, or a deficiency, as the case may be.



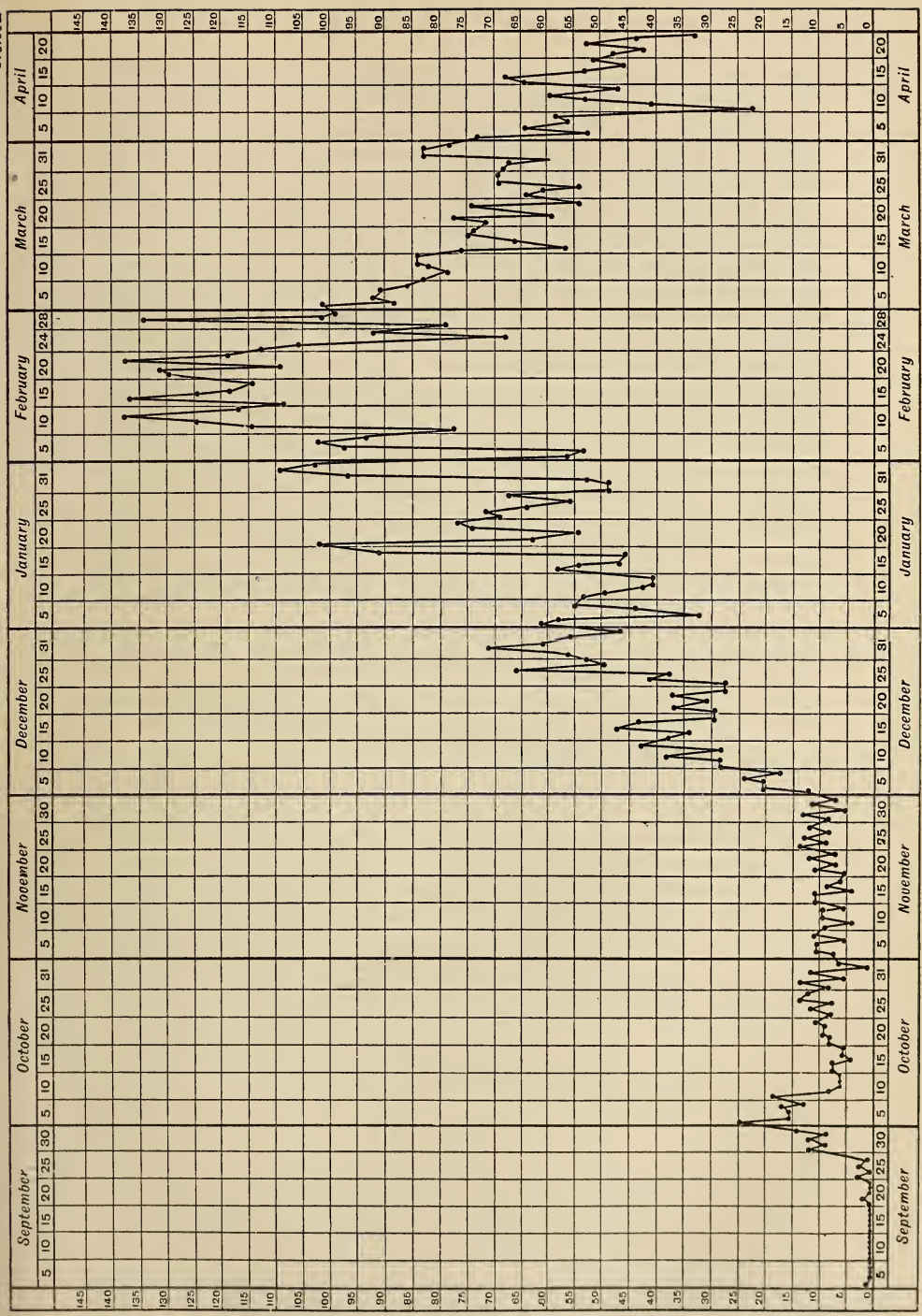
most fatal type were at first classed either as remittent fever or else as some disease of the respiratory system; and many plague cases were concealed by the friends and relations of patients. It was soon apparent that cases registered as plague fell far short of the excess of the total mortality from all causes over the normal mortality from all causes, and competent authorities came to the conclusion that the greater part, if not the whole, of this excess ought really to be treated as due to plague.

It was found that after making allowances for errors of registration due to faulty diagnosis and other causes, the plague mortality for the seven months from October, 1896, to April,



1897, was probably not much, if at all, below 20,000; whereas the official returns indicated a mortality, as I have just said, of a little more than 10,000 deaths.

Before going further I will invite your attention to the three charts which will now be thrown on the screen. In the first of these, the dark line shows the average daily mortality from all causes in Bombay in each week from the week ending on the 19th May, 1896, to the week ending on the 1st June, 1897, and the dotted line shows the average daily mortality for the corresponding weeks in the preceding five years. The spaces between these two lines for the seven months from October, 1896, to April, 1897, represent the excess of the actual mor-



tality over the normal mortality so long as the first epidemic lasted, or, in other words, they represent the average daily mortality due to plague in each week during that period. Figures indicating the average daily excess in each week are noted on the chart. The second chart shows the average daily number of plague cases—whether fatal or not—reported by the Municipal Health Department for each of the 35 weeks from the 2nd October, 1896, to the 3rd June, 1897. The third chart shows the course of plague mortality, as recorded by the Health Department, from the 1st September, 1896, to the 20th April, 1897.

The system of registration is, I believe, better now than it was a year ago. Still, it may be doubted whether it is even yet perfect, for the official returns are still much below the figures deduced from the total mortality tables, and there has been no other epidemic prevalent in Bombay to which the excess can be attributed. There seems to be no valid reason why the same method should not be adopted for computing deaths from plague during the second epidemic as was accepted as approximately correct in 1896-7. By this method we arrive at the following results for successive stages of four weeks each, in each epidemic, as now shown on the screen:—

Stages of 4 weeks each in the First and Second Epidemics.	Plague Mortality in each Stage.	
	First Epidemic.	Second Epidemic.
No. 1, ending on 27th Oct., 1896, and 29th Oct., 1897 .....	784	1,264
„ 2, „ 24th Nov., 1896, and 26th Nov., 1897 .....	945	1,113
„ 3, „ 22nd Dec., 1896, and 24th Dec., 1897 .....	2,681	1,428
„ 4, „ 19th Jan., 1897, and 21st Jan., 1898 .....	5,012	3,435
„ 5, „ 16th Feb., 1897, and 18th Feb., 1898 .....	4,872	5,860
„ 6, „ 16th March, 1897, and 18th March, 1898 ...	3,584	6,520
„ 7, „ 13th April, 1897, and 15th April, 1898 .....	2,079	4,400
„ 8 (2 weeks only) ending on 27th April, 1897, and 29th April, 1898 .....	408	1,039
Total for 30 weeks (between the beginning of October and the end of April) .....	20,365	25,059

These figures show that, in the first epidemic, stages Nos. 4 and 5 were the worst, and in the second, stages Nos. 5 and 6.

The highest average of weekly mortality in any stage of the first epidemic was reached in stage No. 4, ending on the 19th January, 1897, when it amounted to 1,253 deaths, and the highest actual mortality in any week occurred in the first week



of that stage—when it reached 1,379—and again in the week ending on the 9th February, when it again reached the same figure. But the average weekly mortality in group No. 5, in which this latter week occurs, was 1,218. In the next two stages it fell rapidly, and in the last two weeks of the first epidemic the average weekly mortality was 204. In the second epidemic the mortality was higher in stages Nos. 1 and 2, and lower in the next two stages than in 1896-7, and higher again in stages Nos. 5, 6, and 7. Up to the end of stage No. 5 the week showing the maximum mortality was the third week of that group, that is, the week ending on the 11th February, 1898, when the mortality was 1,622. In 1897 the mortality declined steadily after the close of the corresponding week, but it has been otherwise in the present year. In the week ending on the 18th February the mortality amounted to 1,500. The figures for the next four weeks, ending on the 18th March last (which constitute group No. 6), were successively 1,541, 1,563, 1,587, and 1,829. This last week has been the worst of all. The mortality fell in the next week to 1,633, and in the three subsequent weeks, ending on the 15th April, it fell successively to 1,189, 879, and 699. Though the mortality in stage No. 7 has been higher in 1898 than in 1897, yet the epidemic has declined more rapidly during this stage than was the case a year ago. The average weekly mortality in the two weeks ending on the 29th April, 1898, was 519. The practical cessation of the second epidemic may now be regarded as established, for in the week ending on the 6th inst. the mortality fell to 229, and in the following week, ending on Friday last, it was reduced to 105. The statistics clearly point to climatic influence as a controlling factor in the development and decline of both epidemics.

If, notwithstanding the cessation of the plague in an epidemic form in the present month of May, as in May, 1897, it is not completely stamped out in the next few months, but should linger on in sporadic cases, as in the period from May to September, 1897, then there will be ground for fearing that, when the climatic conditions again become favourable in October next, Bombay will not escape a third pestilence; for we cannot fight against such conditions. We try to produce beneficial changes of climate in certain areas by extending the growth of forests, but no such methods seem to be open to us in the narrow and crowded area of the town and island of Bombay.

If climatic influence were the only factor to be dealt with, we might indeed despair. But there are other conditions which can be controlled. There can be no question, for instance, that when the health of a crowded population is lowered by insanitary surroundings, the people become liable

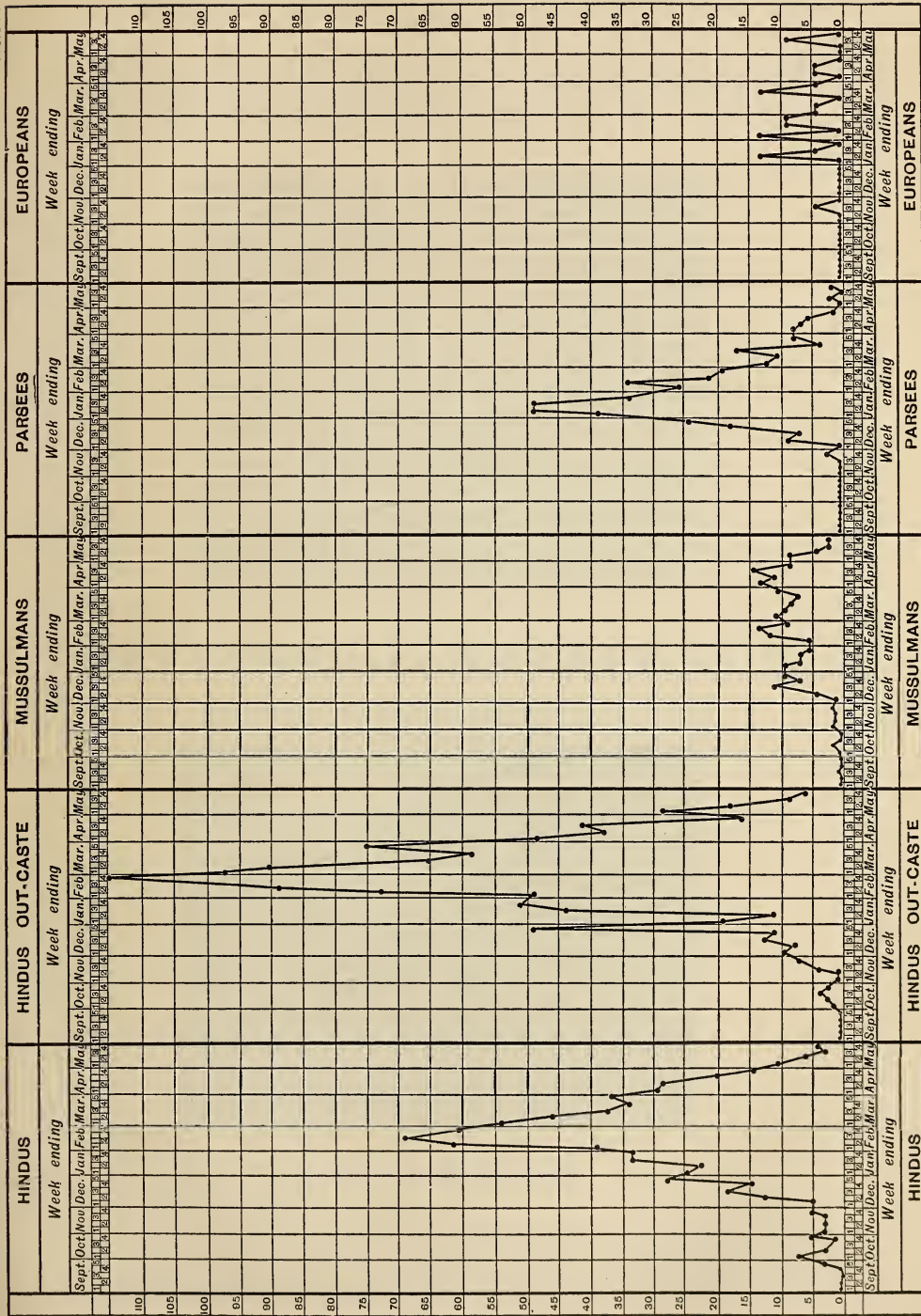


to attack. It is as true now as it was in the Great Plague of London that the poor, the weak, and the sickly suffer most. Even so long ago as in 1362 it was noticed of the plague of that year by a contemporary writer, Symon de Covino, as narrated in Mr. Wright's introduction to "*Piers Ploughman*," that "he who was ill nourished with unsubstantial food fell before the slightest breath of the destroyer. To the poor death was welcome, for life is to them more cruel than death. But death respected princes, nobles, knights, judges, gentlemen. Of these few die, because their life is one of enjoyment." Dr. Hirsch thinks it probable that the "social element" gives the key to such differences as have been noted in several epidemics of plague in respect of the susceptibility of various races. The comparative immunity enjoyed by certain communities in Bombay, and especially by Europeans and Mohammedans, and to a less degree by Parsis, as traced in the chart which will now be shown on the screen, may perhaps be thus accounted for.

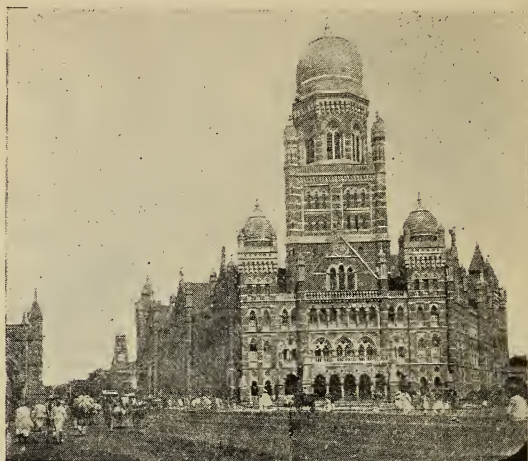
Europeans enjoyed comparative immunity also at Hong-kong in 1894, but not to the same extent in 1896. Again, in Egypt, the plague was not so fatal to Europeans as to Arabs, Nubians, Berbers and Negroes.

It has been pointed out by Dr. Hirsch that accumulations of filth in streets and houses, the defective disposal of refuse of all kinds, the over-crowding and insufficient ventilation of dwellings, the "frightful misery" resulting from the disregard of considerations of rational hygiene "in all that relates to dwellings, clothing and the like," have always fostered the epidemic prevalence of plague. "The classes most exposed to such injurious influences have suffered from plague most severely." In Bombay, some of these conditions have been present; and it is to the necessity for their abatement that attention has been constantly directed since the outbreak of the epidemic of 1896-97. Splendid work has been done both by the Executive officers of the Municipality and by General Gatacre and the Plague Committee in cleansing and disinfecting streets and crowded houses and drains, in removing obstructions to the entrance of light and air into infected buildings, in providing accommodation elsewhere, in hospitals or temporary huts, for the occupants of such buildings, and in destroying domestic refuse and articles likely to be infected.

Special importance was attached, from the first, to the disinfection of infected houses, which were treated practically as if on fire, and were flushed from flushing-pumps and fire-engines with water charged with disinfectants, chiefly cresol or phenyle preparation and permanganate of potash. Sulphur was burnt inside houses, particular parts of which were also lime-washed. Besides lime-washing affected houses the municipal officers undertook the work of lime-washing throughout



the city on a very large scale, in advance of the disease. Whenever infected houses had been thoroughly cleansed and vacated for a short time, fresh cases of plague rarely occurred in them.



The Municipal Hall, Bombay, and Offices of the Municipal Commissioner, Executive Health Officer and other Officers of the Municipality.



Disinfection of Houses by Flushing.

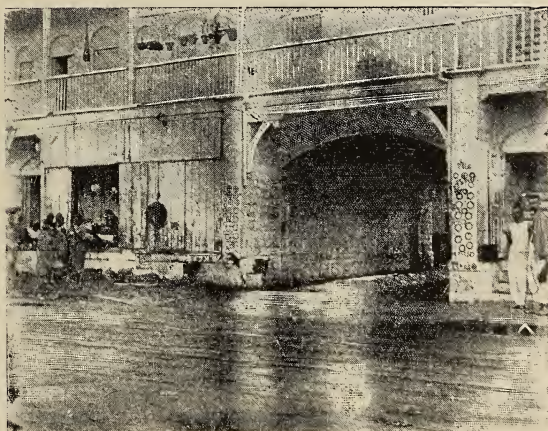
There were some lamentable exceptions, however, to this rule, and among the photographic slides which I will presently show you, I have one of a house in which no less than 53 deaths



occurred. A house to house visitation by medical officers was instituted during the prevalence of the first epidemic. Street watering was suspended, and the water supply stopped or



Disinfection of Houses by Lime-washing.



*From a Photo by]*

*[Professor Muller.*

A House in De Lisle Road in which 53 Deaths from Plague occurred—the largest number registered in any house. The circles on the wall indicate the deaths due to Plague.

reduced wherever it produced excessive dampness of the soil. Poor patients were treated medically, and unclaimed dead bodies cremated, at the public expense. Infected shops and ware-



houses were closed, and buildings unfit for human habitation were condemned. As observed by the Municipal Commissioner, Mr. Snow, in the report from which I have already quoted, "every kind of measure known to science was tried in Bombay at one time or another; and, as further experience was gained, the measures were modified from time to time." It was noticed by the leading scientists who visited Bombay that "never in the course of history had a rising epidemic of plague in a vast city been kept within such moderate bounds."

Early in January, 1897, the Government of India deputed Dr. Cleghorn, the Director General of the Indian Medical Department, to study the position of affairs in Bombay, and to settle a plan of action in the event of the spread of the plague to other places. Acting on the view that the incidence of plague was



A House condemned as Unfit for Human Habitation and thereafter Closed.

greatly due to local conditions, he recommended the removal from infected houses of all their inmates, the healthy as well as the sick, in order that the Health Department might the more effectually carry on the work of cleansing and disinfection. The adoption of Dr. Cleghorn's proposals in their entirety was found to be impracticable, but the Bombay Government distinctly recognised the evacuation of infected houses and the segregation of the healthy as desirable measures, which should be carried out to the utmost limit consistent with the avoidance of a general panic; and on the 23rd February the Government of India was informed that, on the occurrence of the plague, and even before its outbreak, gangs of labourers had been employed in taking off the roofs of houses, hundreds of which had in

consequence been vacated, and that huts had been erected for the inmates. The general object in view had thus been studiously prosecuted. In the course of the correspondence on this subject, the Government of India expressed its appreciation of the liberal measures sanctioned by the municipality and of the energy displayed by the Municipal Commissioner, the Health Officer, the Executive Engineer of the Municipality (Mr. C. James), and their subordinates.

The necessity for special hospital accommodation for plague patients and for increasing the number of such hospitals, so as to bring medical relief as near as possible to the dwellings of patients, and to provide for the treatment of patients of particular castes and communities in their own hospitals, became apparent at an early stage of the first epidemic. Such plague



*From a Photo by]*

*[Professor Müller.*

Removal of a Family from a Plague-infected House to a Segregation Camp.

cases as could be segregated were at first sent to the Municipal Hospital in Arthur Road, which was opened for the treatment of infectious diseases before there was any indication of the plague. Up to October, 1896, the only other hospital where plague cases could be received was St. George's Hospital, which was available only for Europeans. In October, two private hospitals were opened by the Hindu community for Hindu patients, but were closed on account of the high mortality in them and the alarm caused by the establishment of hospitals in crowded localities. In December, hospitals were opened for Parsis and Jains and for the workpeople on the Port Trust Estate; and, in January, for Hindus and servants of Europeans. Much good work was done in this latter hospital, under the supervision of Professor Oswald Müller, of the Elphinstone

College, and Dr. Barker, at a critical time when alarm was spreading. The attention and kindness shown to patients went far to arrest the flight of household servants, which had already begun. The old historic Government House at Parel was placed by Lord Sandhurst at the disposal of the Health Department in February, and was afterwards maintained in complete working order by General Gatacre's Committee. It had surely never been put to a nobler use. A jail hospital in Parel Road, a second municipal hospital in Grant Road, and fourteen private hospitals were established in March. In the course of this month, the sanitary administration of Bombay was entrusted by the Government to General Gatacre's committee, which carried on with energy the work which had been thus begun. In April and May, seventeen more hospitals were opened, most of which were private hospitals. Before the middle of May, 1897, there were 41 plague hospitals in working order throughout the city, of which 31 were opened after the appointment of the committee. Of these 41 hospitals, 27 were private institutions for the use of members of particular castes, communities, or sects, and were under the supervision of medical officers working under the Plague Committee. All castes, creeds and races joined in the movement, and great credit is due to the munificent founders of these private hospitals, and to the medical men who most cordially came to the assistance of the committee in working them.

It was not, however, altogether a simple matter to secure these results. There can be no doubt that at an early stage of the epidemic the poorer classes had lost all confidence in the medical treatment of plague cases; and it is estimated that only a small percentage of persons attacked by the plague were seen or treated by medical men. Many infected persons were not brought to the hospitals till they were in a dying state; and when death, hastened possibly by the fatigues of a long journey, was seen in such cases to follow speedily on admission to hospitals, the wildest rumours regarding the alleged ill-treatment of patients by medical officers were spread abroad and believed. Many thousands of those who fled from Bombay were impelled by fear of the hospitals as much as by fear of the plague itself. But flight from unknown evils was not the only expression of popular ignorance, fear and distrust. On the 29th October, 1896, an attack was made by a gang of about 1,000 Hindu mill-hands on the Arthur Road Hospital, which it became necessary thereafter to protect by a police guard; and even before that date the members of the sanitary staff of scavengers were "seeking every excuse to leave the city," and were only kept in hand "by the ceaseless exertions of the Police Commissioner, Mr. Vincent, with his detective staff, the Health Officer (Dr. Weir) and his capable assistant, Mr. Leask."



There can be no doubt also that the people dreaded the separation of the members of families from each other which strict segregation of the sick involved. A Mussulman hospital near the Victoria Gardens was closed for this reason and a new one opened by General Gatacre in the quarter where the patients lived, so that their friends might be near. And indeed, when hospitals became numerous, the relaxation of the strict rule of segregation by the admission of friends tended greatly to allay popular suspicion. Even so early as in January, 1897, Dr. Cleghorn saw indications of a change in popular feeling, and noted that the people were beginning to recognise the advantages of sanitation.



*From a Photo by]*

*[Professor Müller.*

A Family struck by Plague while in flight from Bombay. The father is concealed under the basket. The mother tries to hide an enlarged gland on her neck by holding her child close to it. The child also shows symptoms of Plague. They were all taken by Professor Müller to a Hospital, for treatment.

In consequence of the spread of the plague beyond Bombay, it became an Imperial necessity for the Government, early in March, 1897, to take the control of plague operations absolutely in its own hands, in order that individual efforts, whether of municipalities, local boards, or local officers, might be systematic and co-operative throughout the Presidency, and the methods employed consistent, complete, and, if possible, successful, before the commencement of the monsoon rains in June. It was this important consideration which led to the appointment of the Committee of which General Gatacre was the chairman, and Mr. Snow, Dr. Dimmock and Mr. James were members. The Committee was appointed to carry out measures of suppression and prevention in Bombay itself under



the immediate orders of the Government and was invested with the requisite legal powers, and, under the authority of the Epidemic Diseases Act, provision was made for the payment of all expenses from the Municipal Fund. The three principal objects to which the attention of the committee was directed were, (1) an organisation for the discovery of all plague cases, (2) the treatment of all cases in hospital, and (3) the gradual segregation, as far as possible, of persons who were probably infected by living in the same room with plague patients, or by attending on them; and Lord Sandhurst explained to the Chairman of the Committee the importance, in giving effect to these measures, of ensuring respect for the privacy of women and for religious usages, of opening the hospitals, as far as possible, to the friends of patients, for whom accommodation was to be provided near the hospitals, in order that they might see for themselves that the patients were well cared for, and of preventing distrust by persuasion and firmness.

Advantage was also to be taken of the assistance of native gentlemen, many of whom had already offered their services. In the spirit of these considerate instructions, and with tact and resourcefulness which never failed, General Gatacre, in association with his Committee, conducted the requisite plague operations as long as the first epidemic lasted. The city was divided into ten districts, and medical officers were placed in charge of them, with control over the inspectors and staff which had been organised and trained by the Health Department, and of sub-divisional medical officers recruited from the local practitioners and medical students.

I am indebted to General Gatacre for the map of Bombay, now on the screen. It shows the several districts into which the city has been divided and the positions of the principal hospitals. The number of houses in each district and other particulars are also noted on it.

In connection with this branch of the subject it will, I think, interest you to learn that soldiers, both British and Indian, eagerly responded to General Gatacre's call for volunteers; officers and men alike having sent in their names *en masse*. In all 557 men, of whom twenty were British soldiers, were employed on plague duty, under seven British officers, eleven Native officers, and twenty-five non-commissioned officers, British and Native. They lived in special segregation camps, and were taught nursing and the duties incidental to the search of houses for plague cases. The hospital at Government House, Parel, was worked by military labour and was used as the training school. Services of great value were rendered by this military contingent at a time when it was "almost impossible to procure servants of any description in plague hospitals." The troops were also employed in small detachments of three or four men

in house-to-house visitation with the Justices of the Peace and plague officers, and in disinfecting work. It is gratifying to note the extreme cordiality that sprang up between the soldiers and the civil population. "Every kindness, consideration, and civility were shown," says General Gatacre, "to the people by the men. This was thoroughly appreciated, and the result was the entire absence of complaint." The presence of troops with search parties prevented any opposition to sanitary measures which the ignorant or the turbulent classes might have been disposed to offer, while the presence of resident justices gave assurance to the people that their religion was not in danger.

It became a necessary part of the Plague Committee's duty to secure a competent staff of nurses for the plague hospitals.

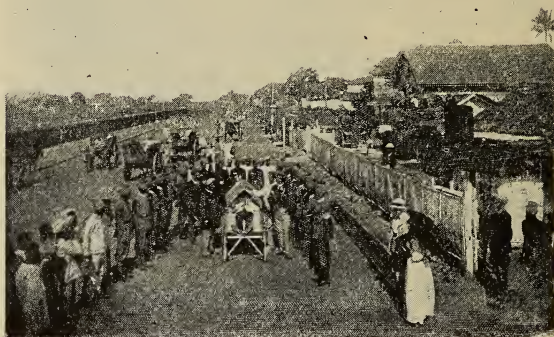


A Plague Party, consisting of Medical Officers, Officers of the Health and Police Departments, Justices of the Peace, Soldiers, and Members of the Lime-washing and Ambulance Staff, starting for Plague Duty, early in the morning.

Before the arrival of nurses from England and elsewhere, timely assistance, the value of which it is impossible to over-estimate, was given, first of all, to the municipal authorities, and afterwards to General Gatacre's Committee, by the All Saints' Sisters at Magazon and the Daughters of the Cross at Bandora, and, later on, by Sisters from the Clare Road Convent and ladies connected with the Church Missionary Society, and also, I believe, by several Hindu and Parsi ladies. General Gatacre's full and comprehensive Report contains some pathetic stories, illustrating the gratitude of plague-stricken patients for the kindness and care shown them by these brave women, whose self-denying services will long be remembered in Bombay.

The skilled attention bestowed on plague cases by the sisters and, after they were relieved of their duties, by the efficient staff of nurses sent from England, or engaged locally, was of signal assistance to the Plague Committee and the large staff of civil, military and medical officers associated with them in their efforts to overcome the popular dread of hospitals and opposition to sanitary measures generally; and, long before the cessation of the first epidemic, these officers were welcomed by the people in their visits to infected houses and hospitals.

I have dwelt at some length on the measures taken both by the Executive officers of the Municipality and General Gatacre's Committee during the first epidemic of plague in Bombay, as I was in Bombay during most of the time that it lasted.



Arrival at a Plague Hospital of a Plague Patient discovered by a Search Party.

I cannot speak from personal knowledge of more recent operations, but I believe that, as a rule, they have been on the same lines as were followed in 1896-97, though as to some matters relating to the evacuation and disinfection of houses modifications have been found to be necessary. But, however that may be, it is certainly open to us to believe that the measures which have been adopted for the suppression of the plague in Bombay have not been without effect, even though the plague has not yet entirely passed away, and that the mortality would have been much higher in both epidemics if such vigorous efforts had not been put forward. The highest estimate of plague mortality during the epidemic of 1896-97 did not exceed  $2\frac{1}{2}$  per cent of the normal population of 820,000, which, however,



was greatly reduced for several months by a large exodus of the people. At one time Bombay was supposed to have been emptied of about one half of its inhabitants. But there were many immigrants also, and no accurate estimate of the actual population at any particular time seems possible. In the second epidemic, the plague mortality has slightly exceeded 3 per cent of the population. In most of the plagues of which we have any record, the mortality was much higher. In the second of the three great pestilences which devastated England in the 14th century,—when, however, no accurate registers were kept,—one half of the population is said to have been swept away. In the Great Plague of London 68,596 persons died, or nearly 14 per cent of the population. In the plague at Moscow, in 1570, the number of deaths was reported to have been 200,000. At Naples, 300,000 persons died in five months, in 1656; in Prussia and Lithuania, 283,000 persons died, in 1704; in Stockholm, 40,000, in 1710; in Marseilles, from 40,000 to 60,000, in 1720. Such contrasts with the mortality in Bombay may well be set to the credit of the vigorous sanitary-measures adopted there; and a similar remark applies with even more force to the efforts of the authorities in Hongkong, where the number of deaths from plague amounted, in 1894, to 2,550, or only one per cent in a population of 255,000.

Still the measures adopted from time to time in Bombay have so far been palliative only. The ravages of the plague had been mitigated, but the disease was not stamped out entirely when it first ceased to be epidemic, and it is possible that the continuance of the plague, during the monsoon of 1897, though in sporadic cases only, may have been due to insanitary conditions which can and, therefore, ought to be removed.

The late Municipal Commissioner of Bombay, Mr. Acworth, considers that Bombay is not a "grossly insanitary town" (see the Society of Arts' Journal for the 25th February, 1898). If it be "judged by any standard hitherto attainable in the East," it is a "very sanitary" town, "the best . . . in India;" but there is "an enormous deal still to be effected," and its recent history has disclosed certain sources of danger which can no longer be ignored. Next to the evils produced by the density of the population and the overcrowding of "chawls" or tenements, the present Municipal Commissioner places those due to the water-logging of the city, which can be attributed (1) to the inadequacy of the means provided for the escape to the sea of all storm-water falling on the higher levels of the island, and (2) to the introduction of 30 millions of gallons of fresh water daily into Bombay from the artificial lakes at Vehar, Tulsi and Tansa, without any sufficient means for carrying it off. The level of the sub-soil water has thus been steadily raised. After the heavy rain at the beginning of the monsoon of 1896, five



millions of gallons of water were daily left in the soil, that being the excess of the amount of water coming into the city over the amount of sewage going out,—a balance indicating, as Dr. Weir observes, “a great danger at all times.” Now, though epidemics of plague may be favoured by dryness of the air, though they have occurred in Kurdistan on dry limestone rocks at high elevations, and in Arabia on a lofty plateau, while swampy plains below have been exempt, yet elsewhere they have occurred in marshy places, as on the banks of the Euphrates; and in Bombay the municipal authorities were distinctly of opinion that dampness of houses, and even of streets, “had a malevolent influence on the propagation of the disease.” The late Principal Medical Officer in the Bombay District, Dr. Hughes, was of opinion that the excess of sub-soil water favoured the growth of plague in those low-lying districts of Bombay where it first appeared; and so long ago as in 1890, Mr. Baldwin Latham drew attention to the alarming increase of certain respiratory diseases (not including phthisis), due apparently to the process, carried on for many years, of filling up the low-lying area to the north of the more populous parts of Bombay, known as “the Flats,” over which the storm-water, falling on the inner slopes of the six trap hills which flank the island on its eastern and western shores, used formerly to find its way to the sea. In his report on the sanitation of Bombay, Mr. Baldwin Latham observes that underground water obeys exactly the same law as water flowing on the surface of land, and that the filling up of the flats with refuse, without providing for their proper drainage, has necessarily raised the level of the subsoil water as well as the level of the floods over the island, and that, as the process was carried on, deaths from the diseases referred to increased from 1,974 in 1880 to 4,132 in 1888. I have no figures for later years, but it is clear that, until effective means are devised and carried into effect, for lowering the level of the sub-soil water and otherwise improving the drainage system, the public health will be constantly menaced. The dampness of the soil may not have been proved to favour the growth of the bacillus, which, as I have said, has not yet been found in a free state in the soil; but defective drainage lowers the general state of health and so predisposes people to disease. The accumulation of an ever-increasing mass of town sweepings and other refuse on such a site as the Flats is also in itself a continuing source of danger.

Such, then, are some of the “local conditions” which it is incumbent on the responsible authorities to deal with. Nor can these matters be held to be of local concern only, and as possessing only a distant interest for us in England. Happily, the two or three cases of plague which appeared in London in 1896 were promptly discovered, and the disease did not spread. But how would it be if the plague crept in unperceived, in the

guise of pneumonia or typhoid—that is, in those very types in which it was not, for some time (indeed, until February, 1897), recognised as plague in Bombay—and obtained a footing in some of the crowded slums of our great seaport towns, in a hot and dry season, such as some of those seasons which favoured former epidemics of plague in this country? Even Sir Richard Thorne, speaking with full knowledge of the progress of sanitary science and practical sanitation in England, after explaining (at the meeting of the Society of Arts at which the subject of the plague in Bombay was discussed) that the removal of insanitary conditions was the basis of all English sanitary administration and the warrant for our abolition of quarantine, expressed the fear that the people of England might be “too credulous,” if they “believed that we had removed the conditions which enabled those foreign infections to grow if they were imported.”

Dr. W. J. Simpson (at the same meeting) seemed to go further. He has hitherto regarded the plague in Western India as “an expanding epidemic,” favoured, indeed, by local conditions, “but acting independently of these.” He bases this opinion on a study of historical facts connected with the gradual recession of plague from west to east, until it reached its home in China, and, after a period of rest, its gradual recrudescence in China and its advance westwards once more. If this theory is sound,—and Dr. Simpson speaks with authority,—if Bombay is but a halting place on the westward march, if it is the possible base for a fresh advance, by land or sea, then the methods adopted for the eradication of plague at a centre of diffusion of such magnitude, with so many lines of communication with other possible centres of diffusion, must be of the gravest concern to the whole civilised world.

The Bombay Government has given legislative effect, not a day too soon, to its proposals for the sanitary renovation of Bombay, which were explained by Lord Sandhurst at a meeting of the Legislative Council held on the 14th February last; and it is satisfactory to note that these proposals have been received both by the official and the non-official members of the Council and by the public with cordial approbation of the general policy of the Government. The leading exponents of public opinion describe it as a courageous and far-seeing measure, conceived with seriousness of purpose and with a genuine desire to promote the permanent interests of the city. Its general scope and objects are described by Lord Sandhurst, in his speech moving the first reading of the Bill, which has since been passed by the Council and awaits the assent of the Governor General. After referring to the difficulty of dealing effectively and promptly with the crowded areas on which buildings were erected long ago, in disregard of all sanitary principles, for the

accommodation, in some cases, of hundreds of lodgers, he said that it was to meet this difficulty that the Bill was framed. It was proposed to build "chawls" on proper principles, to house those who would be dishoused. In preparing a bold and comprehensive scheme for this purpose, the Government has considered the Report of the Bombay Extension Committee, appointed by Lord Reay in 1887, of which Sir Frank Forbes Adam was the chairman, the English Housing of the Working Classes Act of 1890 and the provisions of the Bombay Port Trust Act of 1890. It is proposed to constitute a special body, similar to the Port Trust, to carry out the requisite improvements; and in this body the most important interests of the city will be represented. As the welfare of Bombay is a matter of general concern to the people of all parts of India of which it is the trading centre, the general taxpayer will be called on to meet his share of the cost of the great enterprise. With the sanction of the Secretary of State and the Government of India, this contribution will take the form of a transfer to the new Trust, on favourable terms, of public lands valued at 57 lakhs of rupees and reclamation rights valued at 29 lakhs. As it is mainly with the sanitary aspects of this measure that I am concerned, I will not describe in detail the constitution of the proposed Board of Trustees, its methods of procedure, the machinery at its disposal, its relations to other local bodies, or its financial arrangements, and certain other questions. It will be sufficient to note that the powers of the Board will be determined by the nature of its work. "It will keep before it two main objects—the improvement of the existing city and its expansion in the future." "We propose," says Lord Sandhurst, "to empower the Board, in the case of specially unhealthy areas, to prepare comprehensive schemes of sanitary improvement, including the making of new and the alteration of old streets, the acquisition of frontages, the filling in of low-lying lands, the acquisition of houses condemned under Section 178 of the Municipal Act as unfit for human habitation, the construction of dwellings for the poorer classes, and the formation of open spaces. In other cases, when all that is required is better ventilation or better communications, the Board will have power to make new streets. In all cases where the operations of the Board displace any considerable part of the population, it will have power to provide elsewhere for the housing of the people so displaced. To provide for the future expansion of the city, the Board will have power to open up building lands by laying out new roads. It will also have power to reclaim any part of the foreshore vested in it." And again, he says: "We propose to endow the Trust with large powers and resources, but I do not disguise from myself that, here in Bombay, the field is very wide and the task a very great one."



The whole duty of the Board is the improvement of the city—nothing less—and it will not have done its task until every unhealthy area has been thoroughly dealt with and its defects remedied—until the city is traversed from end to end by wide roads in the direction of the sea breeze, to secure perfect ventilation, until the chawls for the poor have been provided on a scale and under regulations which will prevent over-crowding, and until ample provision has been made to meet requirements for the expansion of the city.”

Lord Sandhurst took the opportunity to refute certain criticisms which condemned the policy of the Government as having been pursued with the aim and intention of belittling the Corporation, crippling its powers and reducing it in the estimation of the public. He entirely disclaims any such intention, and gives the assurance that the Government “will look forward, with a sanguine hope, for the co-operation of the Municipal Corporation with the new Trust,” particularly in preventing the overcrowding of chawls under their Health Department, in the same way as the new Trust will look after overcrowding in the chawls for which they are to be responsible. He goes on to say: “It is not to be imagined that large sums of money are to be immediately sunk in palatial buildings. The main object of this Bill is not to beautify your city, but to do away with the insanitary areas and the unhealthy localities, and also to see that the areas over which the Trust hold their sway do not become the prey of the jerry builder. Hand in hand with the removal of these noisome quarters, in which so much sickness must prevail, will go the beautifying of your city. I claim for our Bill that it is a great expedient to deal with a very great and overwhelming calamity, and also to point out that, when the calamity shall have passed away, the expedient will continue on its beneficent course.”

On the subject of the re-housing of the poor, Lord Sandhurst's speech contains the following memorable passage: “The re-housing of the poorer classes is one of the most important and attractive provisions of the Bill. I do not wish to refer too often to my visit to the slums, . . . but when I visited those slums, they reminded me most graphically of the stories that one used to read a few years ago regarding the dens and cellars in London where the poorest classes of the great metropolis herded together, where those who had to live by the sweat of their brow had to drag out a miserable existence. We do hope that, by these particular provisions of the Bill, we shall conduce to a higher state of civilisation and of greater vigour on the part of these people who contribute so much to the material wealth of this city. These people deserve our sympathy and assistance. We desire to place them in better houses, so that not only will the sun be let into their houses but into their hearts,



and into their very existence, and thus terminate the sad state of things amongst them, which at present cannot but be one of unhappiness, combined with toil. . . . The times are troublous in Bombay, and the cloud hangs yet heavily over the whole of us in whatever position we may find ourselves placed. But I do believe that a brighter future must be at hand, and that the most efficacious way of bringing it about,—the most expeditious, safest and surest way of bringing it about,—is on the lines which I have endeavoured imperfectly to explain.”

These generous words, prompted by sympathy with a suffering population and by a true apprehension also of our duty in the face of dangers, capable, if not restrained, of indefinite and infinite expansion, will find an echo in the hearts of all who have been watching with anxiety the recent progress of events in Bombay. If the efforts there made could be supplemented by a comprehensive measure, such perhaps as it might be possible for the India Office to initiate, in concert with the Foreign Office, for the suppression of the plague in recognised centres of pestilence on the southern slopes of the Himalayas and in the mountain valleys of Yunnan, and possibly elsewhere in the Far East and in nearer Asia, then it might be possible also for us to hope that the present generation may yet witness the extinction of the most deadly disease which has afflicted the human race for the past two thousand years.\*

---

#### APPENDIX No. 1.

*Notes of the occurrence of Plague in London and some other places in England since the year 1543, and Returns of plague mortality in London, collected by Mr. Baldwin Latham, M.I.C.E., from various sources, and mainly from the Annual Records of Weddings, Christenings, and Burials, kept in pursuance of orders passed by Thomas Cromwell, Lord Privy Seal, in September, 1538.*

- 1543 Plague in London. Lanquette's Chronicle.
- 1548 Pestilence in London. Stow's Annals.
- 1551 Sweating sickness in London. Lanquette's Chronicle and Fabian's Chronicle.
- 1552 Plague prevalent. History of the Weather.
- 1558 Plague in King's Lynn. Richards' King's Lynn.

---

\* When I read this paper at Manchester, in May last, I had not seen the observations communicated by Professor Koch to the German Public Health Society, to which I have referred in an earlier note. The existence of a plague focus in Tropical Africa must now be held to be established. From that centre "the plague found its way some years ago to Tripoli." Professor Koch expresses the hope however, that "it will not be able to resist the advance of eneral civilization, and that it will prove possible to expel it even from the last loci of the uite uncivilized parts of Central Asia and Africa, whither it has crept."

	1562	Plague caused 20,136 deaths. Bills of Mortality, London. Brought by soldiers from the Continent. History of the Weather.
	1562-3	City and Suburbs of London : Burials 23,630—Plague burials 20,136. Maitland's London, page 736.
	1563	23,000 persons died in London of plague between 6th April and last day of November. Lanquette's Chronicle.
	1564	Plague not fully ceased in London. Stow's Annals.
	1569	Plague in London. Stow's Annals.
	1574	Plague in the City. Maitland's London.
	1575	Plague in King's Lynn. Mackerell's King's Lynn.
	1581-2	Between 28th Dec., 1581, and 27th Dec., 1582, died of plague in London 6,930. Maitland's London.
	1587	Plague raged in King's Lynn. Richards' King's Lynn. Burials in Leeds tripled by the plague. Annals of Yorkshire. Plague rife;—said to be due to famine. History of the Weather.
	1588	Plague raged in King's Lynn. Richards' King's Lynn.
	1589	Plague in Newcastle-on-Tyne. Newcastle Record.
Excessive drought.	1592	Plague in London. From March to December, 25,886 persons died, of whom 11,503 died of plague. Graunt.
	1593	Plague in London. 17,844 died, of whom 10,662 died of plague, and the christenings were 4,021.
Wet year.	1594	No record for London. Very healthy at Croydon, also in County parish. (Referred to by Graunt.)
	1595	No record for London. Great dearth in England. No records for London until 1603.
	1603	Burials, London and Liberties, 42,042. Plague burials, 36,269.
	1604	Burials, London, 5,219; Plague burials, 896. Plague raged in many country places.
	1605	Burials, London, 6,391      Plague, 444
	1606	"      7,920      "      2,124
	1607	"      8,022      "      2,352
	1608	"      9,020      "      2,262
	1609	"     11,785      "      4,240
	1610	"      9,087      "      1,803
	1611	"      7,343      "      627
Tempests, Oct., Nov., and Dec. Drought.	1612	"      7,842      "      64
	1613	"      7,519      "      16
	1614	"      7,389      "      22
	1615	"      7,887      "      37
	1616	"      8,072      "      9
	1617	"      8,286      "      6
	1618	"      9,614      "      18
	1619	"      8,008      "      9

	1620	Burials, London, 9,712	Plague, 21
	1621	" 8,123	" 11
	1622	" 8,959	" 16
	1623	" 11,112	" 17
	1624	" 12,210	" 11
	1625	" [walls, 54,265	" 35,417
	"	Burials within 14,340	" 9,197
	1626	Burials, London, 7,535	" 134
	1627	" 7,715	" 4
	1628	" 7,743	" 3
	1629	" 8,814	" Nil
	1630	" 10,554	" 1,317
	1631	" 8,358	" 274
	1632	" 9,439	" 8
	1633	" 8,428	" Nil
	1634	" 10,865	" 1
	1635	" 10,865	" Nil
Great drought. Summer hot and drouthy.	1636	" 23,359	" 10,400
	1637	" 11,763	" 3,082
	1638	" 13,624	" 263
	1639	" 9,862	" 314
	1640	" 12,771	" 1,450
	1641	" 18,291	" 3,067
	1642	" 12,167	" 1,824
	1643	" 13,202	" 996
	1644	" 10,933	" 1,492
	1645	" 11,479	" 1,871
	1646	" 13,532	" 2,436
	1647	" 14,059	" 3,597
Commonwealth commenced.	1648	" 9,996	" 611
	1649	" 10,532	" 67
	1650	" 8,581	" 15
	1651	" 10,773	" 23
	1652	" 12,539	" 16
	1653	" 9,083	" 6
	1654	" 13,126	" 16
	1655	" 11,409	" 9
	1656	" 13,752	" 6
	1657	" 12,434	" 4
	1658	" 14,993	" 14
	1659	" 14,756	" 36
Charles II.	1660	" 15,118	" 14
	1661	" 19,771	" 20
	1662	" 16,554	" 12
	1663	" 15,356	" 9
	1664	" 18,297	" 6
Hot and dry.	1665	" 97,306	" 68,596
	1666	" 12,738	" 1,998
	1667	" 15,842	" 35
	1668	" 17,278	" 14
	1669	" 19,432	" 3

1670	Burials, London,	20,198	Plague,	Nil
1671	"	15,729	"	5
1672	"	18,230	"	5
1673	"	17,504	"	5
1674	"	21,201	"	3
1675	"	17,244	"	1
1676	"	18,732	"	2
1677	"	19,067	"	2
1678	"	20,678	"	5
1679	"	21,730	"	2
1680	"	21,053	"	Nil

There are no further records of plague.

The plague ceased in England, but in the year 1720 there was a great outbreak of the plague at Marseilles, which lasted from May to December.

- John Graunt, p. 33, 25th Jan., 1662. "Within this age, four times, great mortality, that is to say, the years 1592 and 1593, 1603, 1625, and 1636."
- Page 60, Graunt. 1st Edition. Population of London estimated at 384,000. He calculated eight persons to a family.
- Page 40, Appendix. Graunt. 6th Edition. Population in 1661, 403,000 in whole parishes within Bills of Mortality.
- Dr. Farr, Vital Statistics, p. 131. In 1625, estimated death rate at 31 per cent; in 1665 at 43 per cent; in 1593 at 24 per cent.
- Reflections on Weekly Bills of Mortality, published 1663, p. 37. "We reckon 47,520 families to be in and about London, allowing 54 families in each hundred yards, whereof there are 880 within and without the walls, and 494,000 people."
- Sir Wm. Petty, F.R.S., pp. 64 and 67. In 1682, about 670,000 souls in London. 669,930 is the number of people now in London.
- Dr. Farr, Vital Statistics, p. 131. The population of the City in 1631 was 130,178. This would probably be in the City only, and not the population within the Bills of Mortality.
- The area and population within the Bills of Mortality of London have increased from time to time by the addition of parishes to the area.
- Maitland's London, Vol. II., pp. 741-742. Gives a list of 3,038 burials which in the year 1729 were not taken into account in the Bills of Mortality of London.
742. The population of the City in 1631 was 130,268. This was within the wards and return made to the Lord Mayor.

Buried in 97 parishes	2,459	within the walls.
" " 16 parishes	3,697	
" " out parishes	2,132	
	<hr/>	
	8,288	

In 1631, Christened .....	8,524
" Died of plague .....	274



## APPENDIX No. 2.

*Returns\* of the Weekly Mortality from all causes and the Weekly Plague Mortality during some of the London Epidemics, collected by Mr. Baldwin Latham, M.I.C.E., from the Yearly Bills of Mortality.*

## A.

## COLLECTION OF THE YEARLY BILLS OF MORTALITY FOR LONDON AND THE LIBERTIES THEREOF, 1592.

1592.	Burials.	Plague Burials.	1592.	Burials.	Plague Burials.
March 17.....	230	3	Aug. 11.....	1550	797
„ 23.....	251	31	„ 18.....	1532	651
„ 31.....	219	29	„ 25.....	1508	449
April 7.....	307	27	Sept. 1.....	1490	507
„ 14.....	203	33	„ 8.....	1210	563
„ 21.....	290	37	„ 15.....	621	455
„ 28.....	310	41	„ 22.....	629	349
May 5.....	250	29	„ 29.....	450	330
„ 12.....	339	38	Oct. 6.....	408	327
„ 19.....	300	42	„ 13.....	422	323
„ 26.....	450	58	„ 20.....	330	308
June 2.....	410	62	„ 27.....	320	302
„ 9.....	441	81	Nov. 3.....	310	301
„ 16.....	399	99	„ 10.....	309	209
„ 23.....	401	108	„ 17.....	301	107
„ 30.....	850	118	„ 24.....	321	93
July 7.....	1440	927	Dec. 1.....	349	94
„ 14.....	1510	893	„ 8.....	331	86
„ 21.....	1491	258	„ 15.....	329	71
„ 28.....	1507	852	„ 22.....	386	39
Aug. 4.....	1503	983			

Burials, March to December ..... 25,886

Plague Burials, March to December ... 11,503

\* With reference to these returns, Mr. Baldwin Latham writes:—"Since I sent you these records, I have found a detail record for the years 1563-64, which shows exactly the same incidence with regard to the plague outbreak in this Country as the other returns do."

**B.**

COLLECTION OF THE YEARLY BILLS OF MORTALITY FOR  
LONDON ONLY, 1603.

1603.	Burials.	Plague Burials.	1603.	Burials.	Plague Burials.
March 17.....	108	3	Aug. 11.....	1655	1372
„ 24.....	60	2	„ 18.....	2486	2199
„ 31.....	78	6	„ 25.....	2343	2091
April 7.....	66	4	Sept. 1.....	2798	2495
„ 14.....	79	4	„ 8.....	2583	2283
„ 21.....	98	8	„ 15.....	2676	2411
„ 28.....	109	10	„ 22.....	2080	1851
May 5.....	90	11	„ 29.....	1666	1478
„ 12.....	112	18	Oct. 6.....	1525	1367
„ 19.....	122	22	„ 13.....	1109	962
„ 26.....	122	32	„ 20.....	647	546
June 2.....	114	30	„ 27.....	536	432
„ 9.....	131	43	Nov. 3.....	609	491
„ 16.....	144	39	„ 10.....	473	355
„ 23.....	182	72	„ 17.....	384	251
„ 30.....	267	158	„ 24.....	198	105
July 7.....	445	263	Dec. 1.....	223	102
„ 14.....	612	424	„ 8.....	163	52
„ 21.....	867	646	„ 15.....	200	96
„ 28.....	1312	1025	„ 22.....	168	74
Aug. 4.....	1700	1439			

Burials, March to December ..... 37,294

Plague Burials, March to December ... 30,561

## C.

COLLECTION OF THE YEARLY BILLS OF MORTALITY FOR  
LONDON, 1605-6.

1605-6.	Burials.	Plague Burials.	1605-6.	Burials.	Plague Burials.
Dec. 26.....	116	5	July 3.....	110	25
Jan. 2.....	151	6	„ 10.....	134	33
„ 9.....	138	4	„ 17.....	146	50
„ 16.....	138	3	„ 24.....	140	46
„ 23.....	121	6	„ 31.....	178	66
„ 30.....	101	3	Aug. 7.....	181	67
Feb. 6.....	105	5	„ 14.....	197	75
„ 13.....	118	7	„ 21.....	189	85
„ 20.....	109	12	„ 28.....	207	85
„ 27.....	117	9	Sept. 4.....	241	116
March 6.....	98	7	„ 11.....	216	105
„ 13.....	137	9	„ 18.....	214	92
„ 20.....	133	14	„ 25.....	204	87
„ 27.....	123	17	Oct. 2.....	256	141
April 3.....	114	13	„ 9.....	218	106
„ 10.....	145	27	„ 16.....	227	117
„ 17.....	129	12	„ 23.....	224	109
„ 24.....	110	11	„ 30.....	226	101
May 1.....	136	17	Nov. 6.....	183	68
„ 8.....	103	13	„ 13.....	162	41
„ 15.....	94	13	„ 20.....	145	28
„ 22.....	132	14	„ 27.....	123	22
„ 29.....	98	9	Dec. 4.....	160	45
June 5.....	112	16	„ 11.....	137	38
„ 12.....	112	19	„ 18.....	132	28
„ 19.....	119	15	„ 25.....	135	38
„ 26.....	126	24			

Christened ..... 6614  
Buried ..... 7920  
Plague Burials ..... 2124

D.

COLLECTION OF THE YEARLY BILLS OF MORTALITY FOR  
LONDON, 1606-7.

1606-7.	Burials.	Plague Burials.	1606-7.	Burials.	Plague Burials.
Jan. 1.....	150	38	July 2.....	112	27
„ 8.....	115	26	„ 9.....	117	33
„ 15.....	121	16	„ 16.....	154	37
„ 22.....	106	14	„ 23.....	152	51
„ 29.....	134	28	„ 30.....	156	43
Feb. 5.....	158	33	Aug. 6.....	187	77
„ 12.....	147	20	„ 13.....	172	69
„ 19.....	149	17	„ 20.....	189	76
„ 26.....	120	14	„ 27.....	175	71
March 5.....	127	20	Sept. 3.....	232	105
„ 12.. ...	130	30	„ 10.....	243	121
„ 19.....	138	33	„ 17.....	264	124
„ 26.....	124	22	„ 24.....	302	177
April 2.....	123	13	Oct. 1.....	283	150
„ 9.....	138	23	„ 8.....	230	113
„ 16.....	146	27	„ 15.....	223	110
„ 23.....	133	26	„ 22.....	215	82
„ 30.....	125	43	„ 29.....	198	68
May 7.....	94	17	Nov. 5.....	196	66
„ 14.....	128	15	„ 12.....	186	55
„ 21.....	126	25	„ 19.....	148	46
„ 28.....	116	13	„ 26.....	130	21
June 4.....	100	11	Dec. 3.....	126	19
„ 11.....	90	10	„ 10.....	122	28
„ 18.....	86	14	„ 17.....	131	7
„ 25.....	126	21	„ 24.....	129	9

Christened ..... 6,582  
Buried ..... 8,022  
Plague Burials ..... 2,352



## E.

COLLECTION OF THE YEARLY BILLS OF MORTALITY FOR  
LONDON, 1624-5.

1624-5.		Burials.	Plague Burials.	1624-5.		Burials.	Plague Burials.
Dec.	23.....	183	0	June	23.....	640	239
„	30.....	211	0	„	30.....	942	390
Jan.	6.....	220	1	July	7.....	1222	593
„	13.....	196	1	„	14.....	1741	1004
„	20.....	240	0	„	21.....	2850	1819
„	27.....	226	0	„	28.....	3583	2471
Feb.	3.....	174	3	Aug.	4.....	4517	3659
„	10.....	204	5	„	11.....	4855	4115
„	17.....	211	3	„	18.....	5205	4463
„	24.....	252	1	„	25.....	4841	4218
Mar.	3.....	207	0	Sept.	1.....	3897	3344
„	10.....	210	0	„	8.....	3157	2550
„	17.....	262	4	„	15.....	2148	1672
„	24.....	226	8	„	22.....	1994	1551
„	31.....	243	11	„	29.....	1236	852
April	7.....	239	10	Oct.	6.....	838	538
„	14.....	256	24	„	13.....	815	511
„	21.....	230	25	„	20.....	651	331
„	28.....	305	26	„	27.....	375	134
May	5.....	292	30	Nov.	3.....	357	89
„	12.....	332	45	„	10.....	319	92
„	19.....	379	71	„	17.....	274	48
„	26.....	401	78	„	24.....	231	27
June	2.....	395	69	Dec.	1.....	190	15
„	9.....	434	91	„	8.....	181	15
„	16.....	510	165	„	15.....	168	6

Christened ..... 6,983  
 Buried ..... 54,262  
 Plague Burials..... 35,417

F.

COLLECTION OF THE YEARLY BILLS OF MORTALITY FOR  
LONDON, 1664-5.

1664-5.		Burials.	Plague Burials.	1664-6.		Burials.	Plague Burials.
Dec.	27.....	291	1	June	27.....	684	267
Jan.	3.....	349	0	July	4.....	1006	470
„	10.....	394	0	„	11.....	1268	725
„	17.....	415	0	„	18.....	1761	1089
„	24.....	474	0	„	25.....	2785	1843
„	31.....	409	0	Aug.	1.....	3014	2010
Feb.	7.....	393	0	„	8.....	4030	2817
„	14.....	462	1	„	15.....	5319	3880
„	21.....	393	0	„	22.....	5568	4237
„	28.....	396	0	„	29.....	7496	6102
March	7.....	441	0	Sept.	5.....	8252	6988
„	14.....	433	0	„	12.....	7690	6544
„	21.....	363	0	„	19.....	8297	7165
„	28.....	353	0	„	26.....	6460	5533
April	4.....	344	0	Oct.	3.....	5720	4929
„	11.....	382	0	„	10.....	5068	4327
„	18.....	344	0	„	17.....	3219	2665
„	25.....	398	2	„	24.....	1806	1421
May	2.....	388	0	„	31.....	1388	1031
„	9.....	347	9	Nov.	7.....	1787	1414
„	16.....	353	3	„	14.....	1359	1050
„	23.....	385	14	„	21.....	905	652
„	30.....	400	17	„	28.....	544	333
June	6.....	405	43	Dec.	5.....	428	210
„	13.....	558	112	„	12.....	442	243
„	20.....	615	168	„	19.....	525	281

Christened ..... 9,967  
Buried ..... 97,306  
Plague Burials..... 68,596

## CARAVAN ROUTES AND ROAD MAKING IN PERSIA.

By LIEUT.-COL. HENRY LAKE WELLS, R.E., C.I.E.

[Addressed to the Society, in the Library, Monday, April 25th, 1898, at 7-30 p.m.]

I HAVE been invited by your Council to give you a short address on Persia, the country I have just quitted, and in which I have passed the greater part of the last seventeen years. I have chosen as the subject of this address "Routes and Road-making in Persia," being one that, as an engineer, I am interested in, and one which bears closely on the question of commerce; which, I am aware, interests the majority of the audience assembled here to-night.

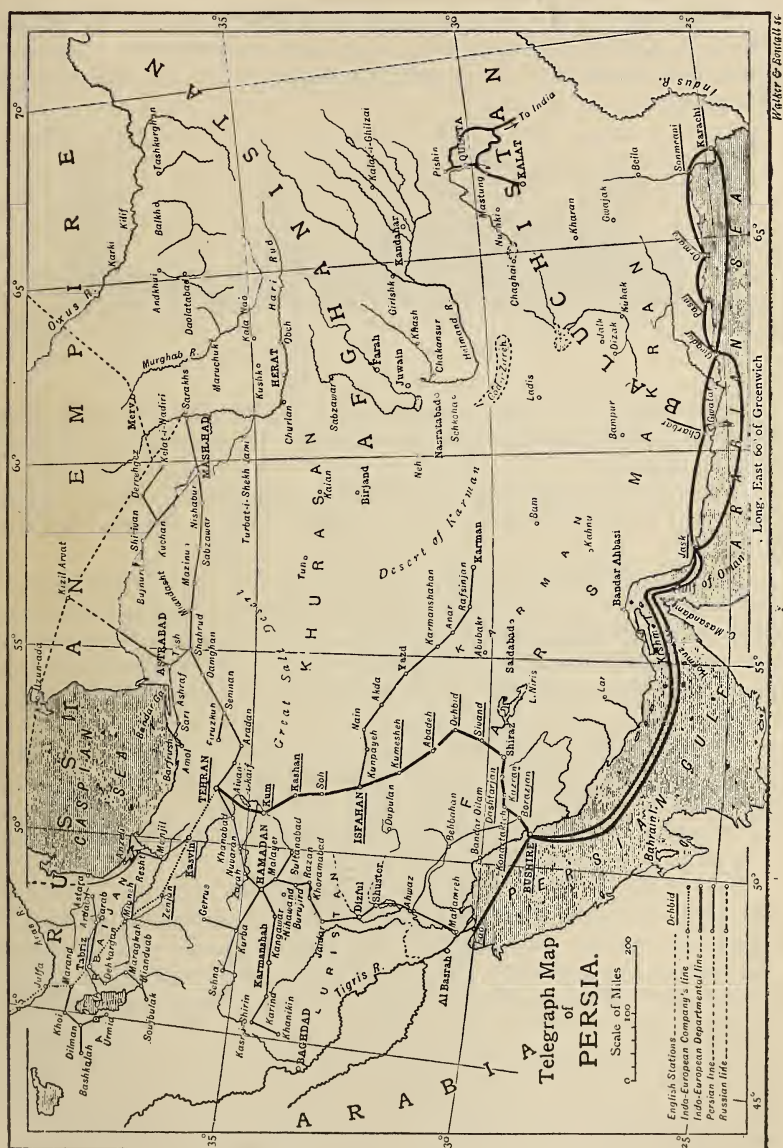
Trade routes follow the lines of least resistance. The resistance may, in unsettled countries, even as regards internal communications, be due to either political or physical difficulties, or to both of them. And, as often as not, the presence of unruly tribes in the country to be traversed, may form a more serious obstacle to the opening of a route, than the presence of lofty mountain ranges, or wide rivers.

It is comparatively as expensive to subsidise such tribes, as to push a bill through the English Parliament in the teeth of the opposition of a jealous rival municipality. Thus it happens, that a route presenting very serious physical difficulties is often preferred to one that is far more practicable from an engineer's point of view.

However, in the East, once a route is established, or becomes the recognised means of communication, it is remarkable with what tenacity it is adhered to. The conservatism of muleteers and camel men has to be encountered to be believed. An old-established route, the dangers and difficulties of which are known, is preferred by them to a better route with which they are not personally acquainted. It requires intelligent engineers, backed by plenty of capital, and by a strong government, to open up new routes in countries such as Persia, and that country, alas! has neither of these requirements. Hence it is that many of the routes at present followed are neither the best nor the shortest possible.

Many of you doubtless know the physical configuration of Persia, and the general character of its geography. These have

been repeatedly described in the numerous books published from time to time on the subject of that country. It suffices

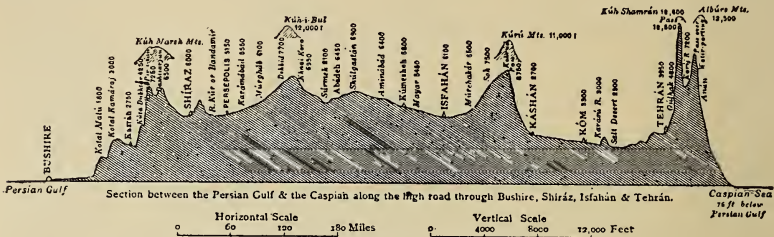


to say now that its area, which is about five times that of the United Kingdom, for the most part consists of an elevated plateau, intersected by barren mountain ranges: which run east



and west, and die out near the eastern frontier. There are but few rivers, and those there are, are inconsiderable. There is a large area of salt desert.

Where there is water the fertility is prodigious. The population is sparse, and probably does not exceed seven million souls, but there is no means of obtaining accurate statistics on this point.



This diagram shows a cross section of the country, and explains better than a long description the general configuration of Persia.

The average height of the Elburz range is 11,000 or 12,000 feet; and the passes over it vary from 6,500 to 10,000 feet in altitude.

It will naturally suggest itself to you, that trade routes would avoid the mountain ranges, which form the retaining walls, so to speak, of the Great Central Plateau on its northern and southern sides, and that they would enter Persia either from the east or the west, and so escape the main obstacles to a good road.

From the east, south of Herat, until just lately, there has come no land traffic, at all events since the time of the Phœnicians. Now, however, the Government of India is encouraging a trade route from Beluchistan to Seistan, and it is said to be proving a great success.

The main range of the Zagros Mountains curves from east and west, to north-west and south-east, and in Kurdistan forms a natural barrier between the plateau of Persia and Turkey. The passes through this portion of the range are, unlike those further east, of no great elevation; notably where the Baghdad route mounts to the central plateau. Further north, the route from Trebizond is the only land trade route from the west, and this used to be the main route for traffic to and from Europe, till the near approach of the Russian frontier, and the import of Russian goods *viâ* the Caspian on the one hand, and the opening of the Suez Canal on the other, crippled its importance. Still trade follows this route in spite of its passing through Turkey and the country of the unruly Kurds, and in spite of its outlet on the Black Sea, being off the highway of seaborne traffic.

When the Trans-Caucasus Railway was opened to Baku in 1882, there would have been undoubtedly considerable trade over it with Persia, in goods brought by ships to Batoum. But Russia imposed prohibitive transit rates, and so blocked this channel. If the Caucasus produced sugar, cotton goods, etc., the comparatively easy route *viâ* Erivan, Djulfa, and Tabreez, which presents no serious physical difficulties, would, in all probability, long ago have been utilised for the purpose of a railway by Russia. As it is, the Caucasus only exports oil to Persia; and Baku, where the wells are, is most conveniently situated for water traffic with the shores of Persia.

When the main lines of Russia are connected with the Trans-Caucasus Railway by a line from Petrofsk, turning, *viâ* Derbend, the main range of the Caucasus Mountains, we may expect to see Russia pushing railways south into Azarbaijan, and so *viâ* Tabreez to Teheran.

At present merchandise and travellers are carried by means of either camels, mules, ponies, or donkeys. These are formed into caravans. In the case of all-pack animals, the load varies with the size and age of the beast—packages of 200lb. each, making a total weight of 400lb., is about the average camel load. The camels are tied in long strings, the halters being fastened to the tail rope of the preceding animal, thus they stalk along resembling a huge caterpillar or centipede. From fifty to sixty go in a line, at a pace of, say, two miles an hour. There is a man to, say, every twelve camels, and often the men may be seen sprawling fast asleep on the top of the loads, or on the back of the donkey, which almost invariably leads the caravan. There are generally huge bells the size of stable buckets, attached to the loads of the largest camel; and each animal has one or more bells round its neck, so the noise made is prodigious. The leading camel, chosen for his size and stately bearing, is bedecked with headgear in coloured hair and beads. The rear one, similarly, has extra attention paid to its personal appearance.

Mule or pony caravans are what are principally used by travellers or pilgrims. They are also largely used for merchandise. The half-load for a mule averages, say, 120lbs. for cases; though closely made bales of 140lbs. are accepted. A mule caravan generally comprises from fourteen to twenty animals. They all march loose and follow a leader—a pony—who is decked out with horsehair, beads, and shells, and carries so many bells, that there is a crash of sound produced by its progress. There is generally a muleteer to every four mules.

Travellers are carried in litters, which are hung over the huge pack saddles, worn by all beasts of burden in Persia. If the litter has a cover it is known as a kajava, and the charge is greater for such than for one without a cover, which is called a palki.

Travellers in these litters are terribly cramped for room, and the jostling they get from the animals laden with packs, when a narrow bit of road is reached, must be far from agreeable. The occupants of palkis or kajavas look very absurd on such occasions, having no power to direct the animal by which they are being carried. These litters do excellently for the carriage of children, and the distances covered by Persians in them are extraordinary. Pilgrimages to Meshad and Kerbella are made from all parts of the country by means of them. Two people of nearly equal weight of course make the best load, but if this cannot be arranged nose bags filled with stones are hung beneath the lighter load, and thus an equilibrium is obtained.

Along the pilgrim routes each spring go loads of corpses. The bodies are placed in rough coffins, which are then wound round with felt. A pair, or sometimes four coffins, go to a load. It is well to give these a wide berth, and keep well to windward.

Waggons are now used in considerable numbers on the roads in the north of Persia, where no serious passes have to be negotiated, notably from Kasvin to Teheran, Teheran to Kom, and on to Kashan; and also from Astrabad to Meshad.

There are huge vehicles with high sides, capable of carrying from two to three tons, which are drawn by four horses harnessed abreast, and are covered with a tilt.

There is yet one more means of transport which is used by Persians for themselves occasionally when sick, but more ordinarily for their wives, viz., a takht-a-rawan or litter, slung between two mules, harnessed to shafts at each end. Heavy pieces of machinery, pianos, etc., are carried by similar platforms or takhts.

The main trade routes at present are from the Caspian on the north and the Persian Gulf on the south.

Russia, as you know, looks on Persia and the rest of Central Asia as her legitimate market.

Her merchants are subsidised by Government, and, as already stated, prohibitive transit rates prevent the goods of other nations passing over her railways. All she wants is roads from the Caspian to the Persian markets. She has long since tapped Bokhara, Samarkand, and Tashkend by the Trans-Caspian Railway.

As soon as that railway was in working order, she began negotiating with the late Shah, Nasser-ed-Din, for the opening of a road for wheeled traffic from Askabad to Meshad. I passed over this road in 1889 when returning from Samarkand, and found that even then, in spite of the perpetual excuses the Persians had invented for delaying the completion of the work, the main cuttings in the mountains were in an advanced state of progress, and the earthen or unmacadamised road, on the level from Kuchan to Meshad, was laid out.



The country slopes up gradually from Askabad towards the Persian frontier, which is situated on the summit of the northernmost ridge of the main mountain range. The Russian road attacks the ascent with sharp zigzags. The road crosses more or less elevated ground till it descends into the plain at Kuchan. The earthen road thence to Meshad, when I saw it, was so bad that often the waggons, which were already traversing it, preferred to take to the fields to following the track which was marked out by side ditches. Kuchan is subject to earthquakes to an extraordinary extent, and the flourishing town I saw in 1889 was a few years after completely destroyed. A great number of the inhabitants lost their lives in the ruins. Still the country is so fertile that the people will not abandon it, and a new village is, I am informed, growing up near the site of the former town.

The inhabitants of Meshad are terribly fanatical. So late as January last, a wretched man, who was suspected of being a Babie, a member of a sect that is increasing in numbers and which is abhorred by strict Mussulmen, was set upon in the streets of the city, in broad daylight, and murdered in a horribly cruel manner.

A branch of the Trans-Caspian line is now being pushed from Dushak to Sarakhs; and from the latter place to Meshad, and Herat, there is no difficulty.

Coming west, the next route is from Astrabad to Shahrud, whence it is easy to go in either direction, viz, east to Meshad or west to Teheran.

There is a good harbour inside the island of Ashurada, which island belongs to Russia; but the route thence into the interior is difficult, going first through forests and then over difficult passes. Nothing has yet been done to improve the track. Still a considerable trade is carried on by means of it, with the Sabzawar and Shadrud districts. The distance from the Caspian to Teheran by this route is, say, 320 miles.

Between Astrabad and Enzelli there is the road of Meshad-i-Sar. The late Shah Nasser-ed-Din, in 1880, had this route improved, and for some time it became more or less important; but it has fallen into bad repair, and caravans of merchandise from Caspian steamers seem no longer to frequent it. Still it forms the only possible means of communication between Teheran and the western and central portions of Mazanderan during the winter, and but for it these portions of the Shah's dominions would be cut off from the capital during the five winter months. The pass crossed by this route is only, say, 8,000ft. above sea level.

The passes into Mazanderan, situated further west, are 10,000ft.; and to get, for instance, from Kojur to Teheran in winter, it is necessary to descend to the sea and skirt along its



shores to Meshad-i-Sar, and so get into the Meshad-i-Sar route, making a journey of fourteen days, instead of four, which it takes when the direct passes are open. There are two or three other tracks over the Elburz passes, as I say, of 10,000ft., open only in summer and autumn. By these latter, charcoal, rice, fish, etc., are brought over from the beautiful province of Mazanderan.

An account of a journey made to that province, in June, 1894, was published in the *Royal Geographical Society's Journal* for November, 1896; and of another made in September, 1896, in the *Scottish Geographical Magazine* for January, 1898.

Mazanderan is a paradise for sportsmen. Ibex, wild sheep, and the huge royal partridge are to be found on the tops of its mountains; stags, pigs, bears, pheasants, and brown partridges on the lower slopes; tigers, and some say wild cattle, at the foot of the mountains. Salmon\* abound at the mouths of the rivers, and I caught one with a minnow, about fifty miles up stream from the Caspian, in October last.

The next route to be described is that from Enzelli to Teheran. By this route far more merchandise enters and leaves Persia than by any other. Though shortly it will be a safe and good road, it is still beset with very serious difficulties.

A Russian capitalist, Monsieur Poliakoff, about 1893 obtained a concession from Nasser-ed-Din Shah, to construct a cartroad from Enzelli to Kasvin, 106 miles, and to take over the 94 miles of cartroad which already exists between that place and Teheran. The Russian Government, I believe, guarantees 5 per cent interest on such sums as Mr. Poliakoff may expend on the work. At first the enterprise hung fire, owing to the mismanagement of the engineers. Now Mr. Poliakoff has obtained the services of a retired Captain of Military Engineers and a number of junior officers of that corps, and the work is going on rapidly. Roburite has and is being used for the extensive blasting operations. Russian overseers and workmen have been brought in large numbers, and with their wives and belongings, evidently have come to stay. Navvies and workmen from the Caucasus are seen all along the road, and Resht is swarming with Russians.

I accidentally made the acquaintance of Mr. Poliakoff when passing through Moscow, and was much impressed by the energy and determination of his character. He will carry his undertaking through thoroughly, of that there is no doubt; and, although it is a very costly one, it will become remunerative in due time, and will advance the prosperity of Russian mercantile houses.

When the road is completed we may expect to see a better steamer service to Enzelli from the mouths of the Volga and

---

\* It would be more correct to describe these fish as "bull trout." They run to about 16lbs. in weight, and show excellent sport.

Baku, and the railway terminus at Petrofsk. That is, the bar at Enzelli will be dredged, and so allow of steamers entering the lagoon (which forms a land-locked harbour), at all seasons and in all sorts of weather. At present steamers have to lie off in the open roadstead, unless they are of very light draught and unless the weather is quite calm.

The postal steamers, which are restricted as to time, sometimes make three trips from Baku to Enzelli without being able to land their passengers.

Once inside the lagoon merchandise will be transhipped to barges, or stern-wheel steamers of light draught, and be carried in them up the lagoon and the small river, to the end of Mr. Poliakoff's road at Pir-i-Bazaar, situated six miles from Resht.

At the other end, from Teheran towards the south, the road, which was built by the British Roads Company, will be available southward to Kom and on to Sultanabad; and the track from Teheran eastward to Meshad presents no serious difficulties to wheeled traffic.

It will be interesting to you to know the history of the British Roads Company, which was formed when the great boom in Persian affairs took place in 1890-91.

The idea was to construct a road, *viâ* Kom, Sultanabad, and Burujird, through the Luri country to Dizful, use the Persian bridge there, and thence go to Shuster, and utilise the upper reaches of the Karun river, or to go direct to Ahwaz, which is situated on the same river lower down.

The road, as made from Teheran to Kom, 94 miles, is very excellent, and cost £80,000.

From Kom an earth road was made to Sultanabad (along which wheeled traffic can go), and then funds failed.

All this road will come in very useful in extension of Mr. Poliakoff's road; and once Kom is reached, waggons can go from thence to Ispahan, *viâ* Kashan and Natenz, and from Kashan to Kerman.

Mr. Poliakoff's company works the tramways in Teheran at a good profit. The short railway from Teheran to the shrine of Shah Abdul Azim, where Nasser-ed-Din Shah met his death, is also in their hands, but it does not pay its way.

There is a glass factory in Teheran, and a sugar factory eleven miles south. These are Belgian enterprises. Whether they will succeed remains to be seen.

The machinery for the sugar factory was brought on camels from Baghdad, no load exceeding 600lbs. The machinery is of the latest and most approved pattern. All, except the boilers (which are English), is of Belgian manufacture. The motive power is electricity.

The whole concern does great credit to the enterprise and business-like qualities of the people who have undertaken it.

To return to the Resht road, which is going to do so much for Russian trade. The 94 miles from Teheran to Kasvin is already well fitted for wheeled traffic, and is being further improved by the Russian Company. The remaining 106 miles to Resht at present consists partly of rough mountain tracks, impassable for loaded vehicles, and partly of quagmires, where the earthwork of the new road is either completed, or going on, but the metalling has not yet been done.

Between these two is a short portion of stony and rocky ground, over which the road has been completed, and is in excellent order.

The discomfort of the rest houses along this route, although they are far larger and more pretentious than those on any other route in Persia, must be experienced to be understood. Even the best of them are dirty and squalid. The condition of those between Kasvin and Resht is abominable.

Nowhere do the doors or windows fit closely. There are no locks and seldom any fastenings to them. The glass, when there is any, rattles dismally in the window frames. The furniture also, where there is any, is of the most rickety description. Insects and vermin abound, especially in warm weather. In cold weather the only way to keep out draughts is to nail carpets and felts over the doors and windows, and sacrifice light to warmth. The chimneys seldom draw. Food and bedding must be carried by travellers, unless they are content to live on hard bread and eggs and to drink brown syrup for tea. There are beds in some houses, and even bedding, nightcaps, and tooth-brushes! but it is better to take all these articles with you.

In February of the present year I had to bring my wife and children from Teheran to the Caspian; the journey was fraught with danger.

The weather was fine when we left Teheran on the 23rd of February.

On the 26th a bitterly cold wind with snow was encountered. The wind increased to a fierce gale.

Kasvin was reached with difficulty, and on the night of the 26th the thermometer fell to 21° below zero (centigrade). To move forward was impossible; the Karzan Pass in front was blocked with snow, and eight men lost their lives in attempting to cross it.

Kasvin is 4,000ft. above the sea. The ground rises gradually from Kasvin to an altitude at the summit of the Karzan Pass of 6,500ft.

The road, which from Teheran to Kasvin runs from east to west, turns north-west to the pass, and then runs north to Enzelli on the Caspian.

After halting for two days, till the gale had abated, we pushed on towards the pass, and the following day crossed it



with great difficulty, descending to an altitude of 2,500ft. at Paichunar, which is situated on the northern slope of the Elburz, near the left banks of the Safid Rud, or white river.

The Russian engineers will doubtless avoid the line of the present track over the pass, and follow that which was chosen by Reuter's engineers when they drew up a scheme for a railway from the Caspian to Teheran in 1878 or '79.

From Paichunar to Mangil, a distance of 20 miles, there is little difficulty. The right bank of the river is reached by a brick bridge, which is in fair order.

From Mangil to Rustumabad is one of the most difficult bits to be tackled. To commence with, there is a bridge to be built across the rapid Safid Rud. At all events, the existing Persian bridge, which is of brick, is impassable, and the river is crossed by means of a temporary timber structure.

The left bank of the river having been again reached is followed for 35 miles. In many places the river flows through gorges of great depth, eroded through igneous rocks.

The mule track ascends and descends, following the way which was doubtless excavated in prehistoric times. This track is now being superseded by an 18ft. roadway, and, as already mentioned, roburite and dynamite are used to cut away the masses of stone, worn into steps and foot-holes by the hoofs of pack animals, and to increase the width, which was previously all too little.

To those who have seen patient quadrupeds toiling along these slippery rocks, with bruised and bleeding fetlocks, the sight of the sturdy workmen engaged in rendering the rough way smooth is very welcome.

At the latter part of this stage we found the road completed and in perfect order, for as there was plenty of stone about, the metalling had been done at the time that the roadway was made.

Before, however, arriving at this completed portion a very serious accident occurred; the pony carrying the pair of litters (kajavas), in which were a Persian nurse and my two young children, at a very narrow part of the road placed its foot on a large stone, which gave way. But that the animal was an extremely quiet one, it and the occupants of the kajavas would in all probability have been killed. This incident will show you how much gratitude future travellers will owe to the enterprising director of the Russian Roads Company.

The last of the rock cutting is passed about four miles from Rustumabad. The stage from Rustumabad, 20 miles, to Kudum is almost entirely through forest.

The climate north of the first-named place is extremely damp, and the rainfall is from 50in. to 70in. per annum.

North of Rustumabad the mountains, which are of sandy loam, stand at a very steep slope. They are clothed with trees



from base to summit. The Rustumabad Kudum stage used to kill more mules than any in Persia—the mud, the villainous track, the steep ascents and descents were terribly trying; and in fact still are, as the Russian road has not yet been metalled, and the caravan traffic is not allowed along it, except at places where the old and new roads coincide. At such places the mud is from a foot to 14in. in depth, and the struggles of the poor beasts of burthen are pitiable to behold. The new road on this stage is mostly cutting on one side, with embankment on the other. Some of the cuttings are as much as 50ft. high, and stand at present at an extremely steep slope. There are drains along the inner side of the road—that is, at the foot of the cutting, but there are no cross drains to get rid of the water; doubtless these will be constructed later on.

This section of the road has been a very difficult bit of work, and doubtless very costly. Its upkeep, when it is metalled and fit for traffic, will be expensive, notwithstanding that stone is obtainable from the bed of the river hard by.

The last six miles of this stage into Kudum, like the whole of the next stage of 24 miles from Kudum to Resht, is on level ground; and the road has existed as one, fit for carriages, for many years. Whilst the Russian engineers have improved it in places by metalling it, they have ruined it in others by heaping up earthwork without metalling.

The six miles from Resht to Pir-i Bazaar, which has hitherto been a veritable slough of despond, is now a good road. And I have little doubt that in a year's time, the hardships and dangers we experienced in February last, will be considerably mitigated.

Having pointed out the activity, and advance, that is going on in road-making in the north, it is now time to turn to the routes, for there are no roads that penetrate to the Persian plateau from the south.

The routes from the south, *i.e.*, from the Persian Gulf, are: commencing from the east, first, that from Bandar Abbas. A very difficult route, as the passes rise to 9,000ft., and are usually blocked by snow for considerable periods in winter. It takes, it is said, a caravan 24 days to go from Bandar Abbas to Ker-man, and 27 from the same place to Yezd.

I have not seen this route, and of course it cannot compete with those further east for the traffic to Teheran.

The next is the Bushire-Shiraz route. Bushire is the richest town on the coast of the Persian Gulf. It should not be termed a port, as ships of any size have to lie three miles off. The road from Bushire for forty miles is over a level plain.

Then commence a series of staircases and gorges, over, and through which, the road is execrable, and hardly passable for laden camels. So mules only are used for 100 miles out of the

180. Between Bushire and Shiraz the road is bad, and for 44 miles abominable. It rises in the 100 miles, from a little above sea level, to 7,250ft.

Shiraz is a decaying town of some 2,000 inhabitants, and thence to Ispahan is about 50 miles by road.

The people just inland from Bushire are a turbulent set. The villagers further north are quiet enough; but the nomads, who move twice a year between the uplands and the plains, are little better than brigands. On the occasion of the assassination of the late Shah, these people laid waste the villages, and plundered the settled population. The roadsides were strewn with the wreckage of caravans, and what they could not carry away they destroyed. All the firms trading from the south, with the interior would have lost heavily, but that compensation was paid by the present Shah. The Governor at Shiraz at the time was utterly incompetent. To strike terror into the hearts of evil-doers he had five men imprisoned for various minor crimes, and executed them in a manner too horrible to be described.

The baggage of the German Minister, who was coming on appointment to Teheran, was waylaid by a party of Kashgaies and utterly ruined. The *débris* was discovered by one of my telegraph inspectors. Photographs, books, and such like articles strewed the road. Saddles, with the flaps cut off and then thrown away, showed the wanton destruction that prevailed.

The Minister lost all he possessed, and was unable to present his credentials to the Shah till a new uniform had been procured from Germany. His letters of credit were actually picked up by the inspector above-mentioned, and forwarded to him in Teheran. Another of the inspectors was nearly killed by a band of robbers, and a third was besieged in his telegraph station for three or four days.

From Shiraz to Ispahan is a distance of about 312 miles, so that from the sea to Ispahan by this route will be 492 miles and to Teheran 777 miles.

The next route from the south is approached by the Shat-el-Arab. There is a bar at the mouth of this river which is passable at high tide only by ocean-going steamers.

About 50 miles up stream from the bar, near the confluence of the River Karun, is Mohammerah, situated on the right bank of the last-named river.

Large ships can lie in the Karun river at Mohammerah, and in the Shat-el-Arab as far up as Busarah.

The River Karun, in the summer, can only be ascended by small steamers for a distance of 100 miles to Ahwaz, where there is a cataract, which is impassable for boats of any kind except at times of very high flood. Even then there is great risk run in warping them up.

From Mohammerah to Ahwaz is say 100 miles by river, and

water transport is carried on above the cataract to within eight miles of Shuster.

From Ahway to Shuster is say 60 miles. In consequence of the cataract, goods have to be conveyed by means of a tram, for a distance of 2,000 yards, from the lower to the upper waters—that is, if they are to be carried to Shuster by water.

It is now intended to open up the road through the Baktiari country, which I surveyed and reported on in 1882. Mr. A. Lynch, of Messrs. Lynch Brothers, of the Euphrates Tigris Navigation Co., has made an arrangement with the Chief of the Baktiari, and Her Britannic Majesty's Chargé d'Affaires at Teheran obtained the Shah's approval in January last.

Goods to go by the Baktiari country will probably be put on mules at Ahwaz, and not be carried on to Shuster. From Ahwaz to Ispahan is about 266 miles, or 226 miles shorter than the route *viâ* Shiraz.

From Ahwaz to Teheran by this Baktiari route will be only 551 miles.

Writing on the subject of this route in 1884, shortly after I had traversed it, I described it as full of difficulties—equal to, if not greater, than those that exist on the route between Bushire and Shiraz.

The Karun has to be bridged, caravanserais to be built, and the track to be improved before heavily-laden animals can possibly traverse it. All these exigencies are receiving proper consideration, and it is to be hoped may be overcome. In 1882 the Baktiaris were so lawless that caravans never ventured into their country. Supplies also were not to be had.

As already mentioned, the British Roads Company proposed to make a road from Ahwaz to Dizful, thence through the country of the Lurs to Burujird, and on to Sultanabad, whence to Teheran the road was actually made.

When funds failed for the completion of this enterprise, the best chance of a cart road being pushed from the Gulf into Central and Northern Persia was lost. In a paper read to the Society of Arts, in May, 1894, I wrote as follows:—

“The road to connect the river with Teheran and central Persia has practically come to naught. In 1890 a concession was procured by the Imperial Bank of Persia, authorising the making of a road *viâ* Ahwaz, Shuster, Dizful, Khorranabad, and Burujird to Teheran, which was to have the advantage of being 250 miles shorter than the better known route *via* Shiraz, Ispahan, and Kashan.

“Engineers were brought out, and the work put in hand in a vigorous manner, but unfortunately a commencement was made at the wrong end. Whether it was with a view of impressing the Shah with the seriousness of the undertaking, or whether with a view of pleasing the Grand Vizier by taking



off his hands the 96 miles of road from Teheran to Kum, which was probably not paying over well—to which road I alluded in the first part of this paper—I am unaware. But this is certain, that £86,000 was spent in putting those 96 miles in thorough order, and pushing on an unmetalled road to Sultanabad, where it now ends in space, leading to nowhere.

“It must be remembered that this Ahwaz, Khorranabad, Burujird route was a line unknown to muleteers, save by the bad reputation held by the Lurs, through whose country it passed. From Burujird to Kum and Teheran was more or less plain sailing, and country known to most ignorant Persians.

“I cannot, therefore, help thinking that had that £86,000 been spent in subsidising the Lurs, instituting ferries, and building caravanserais from Shuster to Burujird, trade might have been tempted to make a way for itself thence to Teheran, and little by little a road company would have been possible. It is very sad that so much energy and expenditure have been wasted. Had but the £86,000 been spent on the road from Bushire to Shiraz, I am confident that it would have revolutionised the trade on that route, and that we should have had fourgons travelling from Bushire to Kum at all events by this time.”

This road was to have been 250 miles shorter than the Shiraz route, and so would have been the shortest road from the south, or 34 miles shorter than the Baktiari route.

There only now remains the Baghdad, Kanikin, Kerman Shah route, which is handicapped by commencing in Turkish territory, and by its distance up the river Tigris.

It is only 500 miles from Baghdad to Teheran, and the road has no serious difficulties—in fact, it is the route now used for bringing pianos, carriages, and such like large or heavy articles from the South to Teheran.

In 1894 a German firm obtained a concession for making a railway over this road, but somehow it has never come off, probably owing to opposition of a political nature.

---

## NEW BOOK.

---

“MEDITERRANEAN DAYS.” By SAMUEL WELLS, F.R.G.S. 50 original illustrations. 224pp. London: Bradbury Agnew and Co. Limited. 1897.

THIS little book is an interesting record of an excursion through France to Italy, North Africa, and Southern Spain. When Mr. Wells addressed the Society he made use of these notes, and members will be pleased to have in this volume a full report of his admirable address. Of course the volume covers more ground than that referred to in the address. The book will be read with very much pleasure.



## NOTES OF A JOURNEY TO BENDE.

By MAJOR ARTHUR GLYN LEONARD.\*

IT was on the 15th of September, 1896, that by order of the Foreign Office, I arrived at Opobo and took over charge of that district from Mr. F. S. James, who had been acting during my absence on leave.

My arrival at district headquarters necessitated Mr. James's removal to Akwete, fifty miles up the Opobo River, one of the principal markets of the district.

Although I had never previously been to Opobo, I had worked in other districts, and especially at Old Calabar, which is the headquarters of the Protectorate, and I had frequently heard all about Bende.

Bende, hedged round by a perfect labyrinth of Ju Ju-ism, is itself supposed to be the centre of the most powerful Fetish in that part of Africa; hence the name "Long Ju Ju Country," given to it by the coast natives, the middlemen between the white traders and the oil producers, a Fetish autocratic enough, at all events, to have resisted all efforts on the part of the white man from ever getting within sixty miles of it.

I soon found it was necessary to go to Bende, to open up the trade routes that had been closed by the Aros, and in the anticipation of and with the expected result of a further development of civilisation and consequent expansion of trade.

The chief—indeed, the only—difficulty next to the Ju Ju taboo, that had hitherto deterred any one from making the attempt, was scarcity of water. But Mr. James having ascertained on reliable authority that a flowing creek existed at Aba, not more than thirty miles distant from Akwete, and that Aba was well on the road, and one of the main routes, to Bende, also that it had a large settlement under Wosu Torti, a powerful chief, I decided on making an effort to reach it. All the necessary commissariat and transport arrangements were accordingly made, and on the 18th of November I left Opobo for Akwete in the steam launch "Lily," in spite of vigorous protests on the part of the white traders, and the principal chiefs, who declared that we were only jeopardising our lives, and that, as we could never get there, it was quite useless making the attempt. Why the former should have represented matters in so gloomy and pessimistic a light I never quite understood, except that they had been urged to it by the latter, with whom, on account of trade relations, they are obliged to be, and are, most intimate. The opposition of the latter was, of course, clear enough, for their connection with the Aros, both of business and Fetish, was extremely close, and they foresaw in our advance on Bende the ultimate destruction of their much-coveted—and, to them, highly-desirable—Ju Ju.

---

\* Communicated by H. LING ROTH.

Arriving at Akwete that afternoon, notwithstanding all our efforts, owing to the great difficulty experienced in obtaining carriers—for the very name of Bende seemed to put the fear of the devil into the wretched Ibos—we did not get away until mid-day on the 16th. A walk of twelve miles brought us to Obegue, the last mile into the town through a broad, well-kept, beautiful avenue of trees. Here we stayed for the night, and Annanaba, the King, placed a hut at our disposal. A tramp of thirteen miles, through country for the most part fairly open, well cultivated, and populous, brought us to Aba. A noticeable feature, and a clear proof to the initiated of the clannishness and distrust towards one another on the part of the towns, and, although belonging to the same family—the “Ugwe”—and to the same nation—the Ibo—was that, although the people, who *en route* turned out in thousands to look at us, appeared to be very friendly and peaceably disposed, not a man apparently moved a step without carrying a naked sword in one hand and a rifle at full cock in the other. Even the boys—some of them not higher than an ordinary man’s knee—walked about armed with bows, and pointed arrows made out of reeds. An uncomfortable habit, to say the least of it, owing to the perpetual uncertainty that continually hung over us in the ugly shape of a dose of jagged iron or rusty slugs.

“Uru-Apa,” one of the leading chiefs of Aba, had a hut cleared out for us, which was very low and stuffy, but this did not in any way deter the natives from gratifying their only natural curiosity. The whole afternoon we were on show. Crowds upon crowds surrounded the hut, and men, women, and children kept gaping at us open-mouthed, as if we were a phenomenon too ghastly for words. The bush was simply alive with people, upon whose faces a variety of expressions were depicted, amongst others anxiety, consternation, fear, surprise, astonishment, bewilderment, and in some few jocularity mingled with a vein of pity, as they grinned all round their faces at the colourless pallor of the livid-faced curiosities, who had come from the country of the great and foaming waters. For hours this went on—one continual stream of “black monkey brands,” varied occasionally by a yellower type, surging round and about, that it was with the utmost difficulty we kept them from inundating and wrecking the miserable hut. As to moving about, it was next to impossible.

While we were thus engaged—*i.e.*, on show—two men pushed themselves into the hut. Both were well made and powerful, one of them being in native costume, the other wearing a coat, and a hat, which he never attempted to remove. The strut and swagger of this latter braggart were too comical for words, and irresistibly ludicrous, and he walked in as if the whole place, ourselves included, belonged to him. He announced in broken English that he was an “Aro man” and a “God boy.” Motioning them to a seat on the box, I told the interpreter to tell the Aros that I was very pleased to see them, but, before I could talk to them, the man with the hat on must remove it; to this he replied that he was as good, and would not take his hat off to any white man, saying in broken English, and with an air of giving satisfaction, as he looked at me, “Me be ‘God boy’—me be ‘God boy.’ You be white man; me be ‘God boy.’”

"You may be a 'God boy,'" I replied, "but we white men are 'gods' who make you Aro boys"; then, jumping up, I continued, "and if you don't remove your hat this instant, out of this hut you go."

In a moment the "God boy" took off his hat, and was profuse in his apologies, so I told them what my intentions were, and that I wished to make friends with his people, and I desired him to convey them my message, that if they liked to see me, I would be very pleased to see them. Promising to deliver it, he and his companion left. But no response was received to my message—beyond a reply that the head men were otherwise engaged. These two were, in fact, the only Aros we saw on this occasion, and that their object in thus intruding themselves had been to spy out our intentions and movements was only too evident. Ultimately we were obliged to retrace our steps, and on the 19th inst. we walked back to Akwete, and on the 21st I returned to Opobo, but, as I had informed the chiefs of Aba, to return in a week, ready equipped with the necessary talisman "dash" in the shape of tobacco, cloth, beads, etc., to go to Bende without fail. My plan was to summon all the big chiefs of the principal waterside towns, to meet me on a certain date at Aba, to discuss affairs relative to the opening of the road to Bende. On the 23rd inst. I was back at Akwete, armed with about fifty loads of dashes, and a day or two after we were at Aba with a large following of chiefs. So it will be readily acknowledged that neither Mr. James nor myself lost a moment in making our respective arrangements. Affairs at the outset altogether appeared more hopeful, and yet I was dubious of Wosu Torti, whom for the first time I interviewed privately at 3-30 p.m., although we had only arrived in camp an hour previously. Wosu Torti is a son of King Torti of Arun, the Long Ju Ju Country, and the most powerful of all their chiefs; for the title King does not necessarily mean anything, and is more often than not a mere empty name. Having talked with Wosu for over two hours, and used all the persuasive eloquence at my command to gain him over to our side and induce him to conduct us to Bende, but apparently to no purpose, I invited him to an open meeting, to be held the next day, at 1-30 p.m., to which he consented to come. The following morning, at 9 a.m., I held a meeting of our own chiefs, who turned up in force, and at which many Aba and Aro people were present, for we were surrounded by at least 3,000 people.

I spoke to them at length; first of all congratulated them on their loyalty, and the energy they had shown in coming so great a distance, for the Ibo chief will not, as a rule, leave his own town, or walk further than he can help, then I laid down plainly the lines on which we were working, impressing on them three points:—

- (1) That Bende was my destination,
- (2) The opening up of the roads my intention,
- (3) And the expansion of trade my object,

winding up by asking them for an expression of opinion as to the advisability or otherwise of such policy. In this they were one and all unanimous as to the decided advantage that would accrue to their people from open roads. Seeing, however, that they received my statements about going to Bende with incredulity, I had to reiterate



and keep on reiterating the fact that I was going, and that it was my intention to take with me a representative chief from every one of the treaty towns. This declaration was at first succeeded by a storm of excitement and argument, for the chiefs had now begun to realise our earnestness and determination. However, we left them to talk it over among themselves, while I instructed Albert Ja Ja—my interpreter, and a most intelligent Opobo native, who had been in England, and talked English almost perfectly—to impress upon the chiefs that they must choose their representatives, as we were in downright earnest, and meant starting the next day. At 1-30 p.m. a much larger meeting was held, at which Wosu Torti and several Aros were present. I opened the proceedings by speaking to them on the same lines—only enlarging on the absolute pacific nature of our policy, which I pointed out was for the promotion of peace, pure and simple, the advancement of civilisation, the development of liberty, all of which was to be brought about by the expansion of trade, the suppression of slavery, and the opening up of the interior, which would eventually result in a general improvement in their condition and welfare.

Many of the chiefs spoke at length, Wosu Torti among the number, but he strenuously denied that he or his family were responsible for the closing of the roads, laying all the blame on the Ndoti family of the Aros. This meeting lasted until 5 p.m., and during all this time Wosu Torti tried every shift and expedient to get me away from the point at issue. Finding me firm, however, he threw down what was evidently his trump-card, which was that he himself would take us to Bende, if all our Waterside chiefs who were present came too. Up to now he had rejected all my offers, and declared his inability to do so without at first obtaining his father's consent. It was, besides, quite apparent that Wosu, ignorant of the hold I had over our own chiefs, counted on their refusal. No sooner had he made the statement than a tremendous uproar began, which, however, was nipped in the bud. The chiefs were informed that they must decide that evening upon those who were to accompany us, so that I might approve their selection, as we started at eight in the morning. The meeting was then dismissed.

That evening, after dinner, we gave the biggest chiefs an audience. The chiefs were approved of, and it was arranged that, instead of going straight on through the country occupied by the Omunka Aros, on the opposite side of the Minne Aja Creek, we were to make a detour *via* Abala. When morning came it was found, as we had anticipated, Wosu Torti had bolted during the night across the creek, several of our carriers having likewise cleared.

Our own chiefs of Chumbele, however, came to the front, Wanoha especially, and by 10 a.m. we were off. Nothing of interest occurred on the march, except a palaver with a portion of the Omunka Aros, who made serious complaints against Wosu Torti and his faction for closing the roads—complaints that, I informed them, would be inquired into on our return.

That night we remained at Okrika, which is also on the Minne Aja Creek, but lower down, and that turned out to be nothing more or less than the creek called Azumiane, which runs into the Opobo River some



fifteen miles below Akwete. There was a wonderful floating bridge, by which we crossed over, that extends for quite half a mile, winding in and out among the dense overgrowth, out of which the water, clear and limpid, comes gurgling—so clear that you can see to a depth of forty feet and count every speckle on the white stomachs of the fish as they swim lazily about.

The following day we halted to enable the chiefs who were accompanying us to make their arrangements, and on the succeeding afternoon of the 29th inst. we walked to Abala, the last treaty town, from whence it was our intention to start.

In the evening a Council of Peace was held, at which Albert Ja Ja and all the chiefs were present. It was decided unanimously that the safest and surest, in fact, the only, way to pass through the country as far as Bende was to swear Ju Ju in every town. All the necessary arrangements were accordingly left to them.

Early on the following morning—Monday, 30th—Ja Ja and the chiefs brought the Ju Ju; that consisted of a bottle of German beer which had been rendered noxious by means of all kinds of vile decoctions. The bottle was concealed by a close-fitting cover of red wool, made out of an old Balaclava cap, with a quill running through the cork, into which a small feather had been stuck. Then, in the darkness of a low mud-hut, with the utmost secrecy, and in language of tragic gesture, Ja Ja, as spokesman of the native Council, unfolded to us the deep mysticism of the rites and ceremonies we would have to perform in every town, the secret of which was not to be disclosed by either Mr. James or myself. Having given our promise, a happy intuition suddenly came to me—happy because it was inoffensive, yet, as after events proved, productive of the most wonderful results—an intuition I lost no time in unfolding to the Council of Chiefs, which amounted to this: To put, as it were, a finishing touch, a climax, on the Ju Ju ceremony, I proposed Albert Ja Ja should let off a bottle of soda water. This, I argued, would have a most excellent effect on the timid natives, who in no way could construe it into a hostile act, but who would be more likely to regard it in the light of a very remarkable and powerful fetish—a spirit gathered from the atmosphere of Nature to safeguard us, and compressed into a bottle as an easier mode of conveyance. To my astonishment, the suggestion was hailed with enthusiasm, and carried *nem. con.* It was also arranged that one of Chief Nadele's boys was to carry the Ju Ju slung over his left arm under the protection of the British flag, which he held in his right hand, and that he was to walk in the forefront of the expedition and lead the way. To make him look all the more imposing, I decked him out in a white shirt, while between them the chiefs raised a sailor's cap with the auspicious name of "VICTORIA" on the ribbon. This was an omen, as I told the chiefs, that would make our success a certainty, because, without design, and purely through the decree of fate, the name of the Great White Queen would lead us to Bende and a bloodless victory of peace. These few words convinced the chiefs that success was guaranteed.

Early next morning delegates from Into Ozo—the first town on the road—arrived at Abala and expressed their willingness to conduct us to their town. Everything being ready, we started, and from here we commenced mapping the road, Mr. James taking the bearings by

prismatic compass while I kept the book. The country was rather open, and the sun extremely hot, and on account of the mapping we did not cover more than two and a half miles an hour, so it was with a great amount of pleasure that we found ourselves at Into Ozo, under a grove of great, grand trees, whose shade was as refreshing as it was grateful. Soon we were surrounded by a greater and more wondering crowd than that which besieged us at Aba, but who kept at a much more respectful distance and were more orderly. A formal introduction to the chiefs having taken place, the usual palaver and explanation of our object and intentions followed. These proving satisfactory, the real business of the day commenced. This was the swearing of the Ju Ju.

Our Ju Ju was placed under the flag in a most solemn manner. On one side of it stood our chiefs, on the other the chiefs of Into Ozo. From the clinging folds of a yard of trade silk, ornamented, if not beautified, by designs wonderfully fantastic, and colours as gorgeously glowing as any rainbow, Ja Ja produced a soda water bottle. Holding it up in the air while he undid the wires, suspense held the people breathless; but when with a rush and a loud pop the cork described a graceful curve of several yards into the air and fell among them, the effect was simply electrical. Out of the few thousand spectators that had five seconds previously been looking on, only a score or two remained, among them the chiefs, who were too afraid to move. Ja Ja, still holding the bottle of soda, which was bubbling and effervescing, walked round the chiefs of Into Ozo, saying, as he did so, in a loud monotone: "If you, or any of your people, do or wish us any harm, our Ju Ju, which in its revenge is terrible and deadly, will most assuredly kill you all, even down to the first born; but if you do and wish well to us, may the longest life, combined with the greatest prosperity and happiness, be yours." Our man, with the flag in his right hand and the beer bottle in the left, walked round the Into Ozo chiefs, repeating what Ja Ja had already said, as he gave them a few drops of the nauseous mixture it contained. It was amusing to watch their faces as they got the horrid decoction into their mouths, and the extraordinary self-control they exercised over their feelings and features, as they drank the liquid nausea without a blink. This done, the flag was again planted in the ground, and the Ju Ju placed underneath it, when a short and solemn interval of silence ensued. The interval, however, was not of long duration, and was succeeded by one of noisy garrulity on the production of the Into Ozo Ju Ju, that consisted of a meagre piece of a broken pitcher, which, I presume, had gone once too often to the village rain-hole. This absolutely miserable object, upon which, however, all the assembled chiefs looked with awe and veneration, as if within its plastic grasp lay the fate of all their lives, was carried right round the members of our party by two chiefs of the town, one of them calling down every available curse and imprecation if our contact with them proved in any way hurtful to any of their people. If, on the contrary, however, it turned out to be beneficial, every conceivable blessing was to be showered on us.

A dash, the expression of mutual good wishes, and a heavy shower of rain having ended the proceedings, we continued our way along with two guides sent in charge of us by the chiefs; for this, I must tell you,

is no whit a less important feature of the whole ceremony than that of the actual swearing; for, once the chiefs of the town place the hands of their guides within the hands of one of our chiefs, they took upon themselves the responsibility of our welfare and safety, until they in their turn had handed us over safely to the next town. This proved to be Ohanza, where we remained for the night. As was to be expected, here too the people in their thousands stared us out of countenance, while in every line and wrinkle of their faces wonder beyond description was written. Yet they were very friendly, and on the whole tolerably quiet. Ju Ju having been sworn, Chief Wogu personally conducted us to his own house, which had been prepared for our reception.

Seven o'clock the following morning saw us on our way, followed by a noisy concourse of people greater than before, wild with excitement, who, if our appearance on the previous evening had astonished them, were now still more so on seeing the performance we went through with compass, book, and pencil. A walk of four miles brought us to Owu, where some difficulty was experienced in arranging certain matters, because of certain complications which existed between the next town, Akano, and one of our treaty towns. But the inevitable dash, and a rather more impressive Ju Ju ceremony, got us over the dilemma.

At Akano we met with little or no trouble, so it was evident that the wily Owos had been trying it on. Here the Ju Ju, which was composed of an array of human skulls stacked on a wooden stool, looked, to say the least of it, a grim and gruesome spectacle in comparison to our common-looking bottle of soda water. As at Aba, so all the way along, the people were armed with flint locks and cap guns, the majority also carrying swords and the lads bows and arrows. While at Akano I saw for the first time men carrying shields which are made from the fibre of palm leaves, firmly secured and plaited together. Here, too, along the road a tree which the natives call Aji was pointed out to me. It is tall, and of a great girth, the wood whitish and soft; from the inner bark the natives make a kind of tough cloth that they fashion into belts, bands, and pouches.

Passing by Abruhi, which had, however, to be "dashed" in the usual way, we arrived in the evening at Omo-pa, the last mile or two into the town being more like an avenue in England, shaded by splendid trees, than a wild roadway in Africa.

So far as we had come, the people, although noisy, seemed to be well under the control of their chiefs, who, when they require to procure silence previous to addressing them, send round a herald with a tom-tom, one or two strokes of which as a rule produces the desired effect. These tom-toms are of various kinds, from a wooden drum to a Brummagem handbell. One curious specimen was composed of a piece of hollow iron that had been made in Abriba, a town in the interior beyond Bende whose inhabitants consist of nothing but blacksmiths, who do all the work in brass and iron for a very great distance around. Since we had started I had noticed several instances of their handicraft in brass keys, roughly made, which the people of these parts wear suspended to their wrists; in rings of brass and steel, with which the vain belles and coxcombs load all the fingers of both hands; also in long sticks,



to which are fitted brass rings at intervals of from four inches to six inches apart—sticks that seem to be greatly in vogue in all the towns through which we have passed.

Under a lowering sky, and in a slight drizzle of rain, we left Omo-pra early the next morning, Wednesday, the 2nd. Having, however, previously secured, with a few heads of tobacco, the intercession of the medicine man, who offered his services, he propitiated the elements and saved us a good drenching, for the threatening storm rolled away and the day turned out fine.

Consequently, in the eyes of our native following the power of the local medicine man was magnified into the reputation of a wizard infallible. On the way we passed by quite a picturesque ruin of a conko—or club—house, standing almost on the road. It was covered with one mass of convolvulus, which grows quite like a weed in these parts, creeping and twining over bushes, shrubs, and trees, but is, for all that, pretty and effective, with its various tints of lilac and purple, enlivening the otherwise sombre foliage with light and colour.

It appears that these conko-houses are nothing but toll bars—hence their close proximity to roads—to join which members have to pay a certain entrance fee. The custom is for certain members to take it in turn to sit there and demand toll from all people passing with goods for trade or who make use of the road for their own purpose. If this is refused, the club members plunder the goods, and in many cases seize the owners, or drive them away. The priests, it is almost needless to say, form the leading members of these institutions, and when necessary to produce an effective impression, Ju Ju is used, for the connection between the conko-houses and Ju Ju-ism is extremely close and binding. In plain words, conko is nothing but part and parcel of a pernicious system of levying blackmail that seems to prevail all over the country—a system which is in a great measure, I imagine, responsible for the closing of roads and the stoppage of trade. A system which at times recoils on itself, however, for it is on this very account that the club-house in question has fallen into ruins.

At a place called Omo-anono I noticed some of the men smoking pipes, the bowls of which are fashioned out of clay and baked hard, a piece of reed being inserted as a mouthpiece, and the portion between this and the bowl covered with a piece of goat hide. The bowl and stem of one of these pipes, which Ja Ja secured for me, is embossed with bright britannia metal, carved rudely, but artistically, on a systematic design that I am told was also made at Abriba.

Here the chiefs made no trouble over the Ju Ju ceremonial or in accepting the dash. They complained of the paucity of caps for their guns. We explained that we were not traders, and moved on to Akeri-Aso, the chiefs of which took the dash with an air of nonchalance—as if they were accustomed to it as a daily routine—that amused us intensely. Judging, too, by the fine conko-house, they had the blackmail system evidently luxuriant in this favoured locality.

After leaving Akeri-Aso the people of Isiko were inclined to be troublesome because we would not turn aside to visit their town, which was some miles off the road; however they were soon appeased when some tobacco and cloth were produced.



Passing through several towns where nothing of importance occurred, and to which no particular interest attached, the afternoon brought us to the Minne-Ibibio. This was the first stream of water that we had encountered since leaving the beautiful creek at Akrika. Indeed the tract of country through which we had marched was practically waterless, being dependent for its supply of water on rain-fed holes, which at this time of the year, the dry season, was very low and extremely thick and slimy. To get to the river we had to descend about two hundred feet through a narrow and water-worn gully, and the sight of the eddying water, thirty yards in width and four feet in depth, flowing with a strong current, was as refreshing as it was soothing, especially to the carriers, who, putting their loads on the ground, rushed into it with wild yells and frantic expressions of delight; for these natives, I must tell you, are very clean and fond of water, always bathing once a day, or twice if they get the chance. Estimating from the southerly direction in which the river flowed, I judged it to be the Qua Ibo, which empties itself into the sea between Opobo and Old Calabar. We had no difficulty in crossing, for a huge tree, the upper portion of which was above the water, lay prone from bank to bank. We were now in the Ibibio country, and, having ascended to about the same elevation from which we had descended on the other bank, we were soon in a thickly populated country.

Close to one town we passed a large and well-built conko-house, the walls of which were by no means badly painted in various colours and designs, that on the whole had quite a unique effect, and one which, if it was not highly artistic, was certainly curiously though rudely picturesque—an effect that was heightened by wavy patterns fashioned out of well-polished cowries that were embedded in the walls. There were several low doorways in the building, and on each alternate one were rudely carved small wooden figures representing nude men and women.

Not long after we had left this house behind we rested for a few minutes at the village of Ibungo, where we were surrounded by the inevitable crowd, agog with astonishment. No ceremony was necessary here, but when we got up to go, two men, one tall and corpulent, the other short and thick set, objected to our going on without paying toll. A noisy palaver ensued; but I insisted on going on, and fell on the rear guard of carriers—a mere handful, the main body having preceded us. I then let off a soda water bottle right over the heads of the crowd, which produced an effect as terrifying as an 80-ton gun, hundreds falling on their knees, while the remainder fled into the bush as if the devil were after them. Then we went on.

We had not got very far when, on attempting to pass by some more houses, which lay on our left, we found a palm-stick placed across the road, and two men holding on to it with the evident intention of barring our progress. A number of people came out and commenced to jabber, and, as they would not remove the obstruction when told, Mr. James severed it with a sharp sword, in two blows, and we walked on, to the evident astonishment of the truculent fools who had been trying to bounce us. Not far beyond we came to some earthen monuments, something in the shape of triangular gateways, put up in honour of

big chiefs, on the spot in which they are buried, across which were stretched upright screens, about fifteen feet in height and eight in width, made out of strips of variously-coloured Manchester cottons sewn together.

It was quite late and in the dark when we arrived at our destination in Chief Oro's compound, in the town of Omo-Apra-Abasi-Oro, after a long and harassing tramp. It was too late, and we were too tired, for any functions that evening, which were postponed accordingly until the following morning. Preparatory to our starting, quite a brisk trade was being carried on between our boys with empty bottles and the Ibibios with very little neat bags, which they make out of palm fibre, an empty wine or spirit bottle being the market equivalent for a bag.

The towns in this country are built in rectangular form, and surrounded by high, well-made fences, bound together by palm fibre, with an entrance in front and an exit behind that are closed at night. At the back is an inner fence, outside which are frameworks on which yams for seed are packed in rows. The Ibibios cultivate well and extensively, and in addition to the ordinary produce I noticed peppers and okro were plentiful, and for the first time we saw sugar-cane, which seemed to be of good quality.

We were now in broken and undulating country. A short walk landed us in Oboihia, where we anticipated certain diplomatic trouble, owing to the fact that its chiefs were said to be under the influence of Wosu Torti, which, however, we expected to surmount by means of the slight extension of our "Open Sesame." To our relief, however, the old Chief Ilazu and his son, Inkaro, were extremely affable and sensible. While resting here I sat on the trunk of an old tree, lying close to the town club, on which I noticed some antiquated carvings, rudely but quaintly executed, representing a crocodile, a bird, a reptile, and a fourth object, of which I could make nothing.

As we approached the outskirts of the next place, Ekpiri, a hot-headed lad, with a drawn sword raised to strike, shouting at the top of his voice, "Who are these white strangers, and what do they want here?" rushed at the head of the column and Mr. James and myself. Taking no notice of him whatever, we continued sketching, and many of the Ekpiri people hearing the unusual noise came out and welcomed us warmly, while they hustled the lunatic off the scene. I informed the chiefs of what had occurred, and pointed out the fatal consequences that might have resulted if the crazy youth had wounded any one; they one and all agreed with me, and promptly denounced the offender.

Leaving Ekpiri, Ami-Okimi was our next stage. On the way we paid a visit to the local water spring. Climbing down about 120 feet we found ourselves in a narrow gulley, the descent to which was nothing but a succession of steps cut out of the hard red clay, stakes being stuck in the ground to help the water-carriers up and down. At the bottom we found water dripping from a height of twenty feet into a small basin-like cavity, which runs off in an easterly direction into a tiny stream. There were no signs of either granite or quartz; only small pieces of soft sandstone were visible, while the soil over which the water kept dripping was a form of chalk. In colour it is of a dirty white or

grey, of a kind that is much used by the natives all over this portion of Africa to smear their bodies and faces with, and they attribute to it certain medicinal properties of a curative and cooling nature.

At Ami-Okimi we stayed for the night, and whilst we were awaiting the completion of the necessary arrangements a large and excitable crowd gathered round us. We noticed with some anxiety that many of our carriers were the worse for drink; but fortunately nothing unpleasant occurred. This, in common justice, I must point out, is the first and only experience of such a nature that I have had in West Africa, and there was after all much excuse for the people, as it happened to be their one and only annual festival. There is another fact, too, which must be considered; that is, that these people more often than not dance themselves into a state of absolute light-headedness.

The next day, Friday, the 4th, found us walking through a splendidly-wooded, well-watered, hilly country, and all the way to right and left of us glorious panoramas of wavy undulating country of tree-clad hills and valleys kept unfolding themselves, that after the deadly tameness and painful monotony of the hideous mud and mangrove, appeared in our eyes at least as intensely beautiful and picturesque.

One thing we did miss, however, was the grateful sea breeze. I must not forget to mention the cotton plant, with its brilliantly bright yellow flower and deep purple stamen, which enlivens the sombre green of the surrounding scenery, and grows all the way along from Omo-pra. Although it appears to flourish, it is not extensively cultivated by the natives; yet they evidently understand its utility, for they manufacture narrow strips of a coarse cloth, which is entirely hand-woven, direct from the cotton from the pods, without previous manipulation. I should say the material is excellent and the soil adapted for its growth, more especially if such cultivation were taken in hand properly. I am no judge of cotton, but from what I have seen in India, I should say the material is excellent and the soil adapted for its growth, more especially if such cultivation were taken in hand properly and thoroughly.

At Omo-Soko the people were inclined to be troublesome, and a select committee of the inhabitants were downright truculent; however, by means of suavity and soft soap, we managed to circumvent them, and continued our way to Ibiri. Here we were at once surrounded by thousands of people, who, although they were extremely noisy, were uncommonly keen traders, the keenest we had yet come in contact with, bringing yams, coconuts, plantains, mealies, eggs, fowls, also musical instruments and earthenware pots of various sizes, used for carrying water and for cooking, which they themselves manufacture in thousands out of their own native clay. In exchange for their goods they preferred to take manillas (bracelet money) to tobacco.

Owing to the Ju Ju soda water failing to go off with its accustomed vigour, extra-strong Ju Ju had to be sworn; the beer bottle was taken round in a most impressive manner, the Ju Ju man sprinkling the nauseous compound all over the ground. This was followed by Ja Ja walking round with the flag—an act which created a great impression, and had the desired effect of scattering all the people broadcast into the bush. They were as timid a lot of creatures as ever I set eyes on;



and it appears to me that the further we go the more timid and peaceful they become.

On leaving Ibiri the chiefs informed me that they were obliged to send us by a longer road because they were at war with the country through which the more direct route lay. At Omolo we passed close to a small colony of Aros belonging to the House of Wosu Torti, but none of them were about. One of the most noticeable characteristics in this part of the country are the elaborate and extensive yam frames that are built of sticks right out in the fields and away from the town. The country was now very broken and hilly, consequently the road was rough and full of declivities, frequently rising and falling sheer several hundred feet, and so steep and slippery that the people are obliged to cut steps in the clay and place stakes in the ground to enable them to get up and down. All the approaches to the town were protected by strong stockades and guard-houses; so it was quite evident that they were either not on good terms with, or were distrustful and afraid of, each other. Water is plentiful all the way along, the road being intersected at frequent intervals by streams, and the soil appeared to be a rich, red loam.

Early on Saturday, the 5th inst., we arrived at Omo-Torti, an Aro settlement, the people of which trade with Azumini and Ohumbele. These Aros, it appears, belong to the real Torti stock, of which Wosu Torti's family is only an offshoot, Wosu's father having taken his name from the original or elder Torti. Of recent years, however, Wosu Torti's father has become much richer, and consequently more powerful, than the elder branch. Here we received a message of welcome from the Ibo chiefs of Bende, to which we sent a most cordial reply, saying that we would be in their town in the course of a few hours. Having waited longer than we intended for the Aro elders, who sent a polite message to say that they were in play and could not see us, we pushed on. We had not got very far when they came after us; but I declined to stop, and told them I would see them at Bende if they cared to come there.

The heat was so intense that about mid-day we were obliged to halt for an hour. The road was cut up by marshes and rivers, which we crossed by stick bridges of the most rickety description. All the way from Omo Torti the country is splendidly wooded and extremely populous; and in every town we passed through the people were not only friendly, but expressed great pleasure at our having come amongst them.

At 4 p.m. we entered Bende town, walking through a fine avenue, shaded by trees of noble dimensions, until we reached a large Ju Ju House, which was unusually well built of the usual thatch and mud, the side walls being very low, only three feet or four feet high, the roof sloping right down to them, and the front entirely open. At the far end, on a raised platform, were three large wooden figures, fantastically painted and hideous in the extreme, representing father, mother, and offspring. The floor, walls, and basis on which the supports of the house stood, were made of clay, so beautifully polished with a rich chocolate maroon that we mistook them for old wood; indeed, at a distance they looked very like a good imitation of dark, rich mahogany. While we were looking at the figures and enjoying the novelty of the



whole thing, Chief Alenkanon said something to the people that for a minute or two raised quite a panic among them, which, however, soon subsided upon my giving him a severe reprimand. From the entry of the town to the Ju Ju House the road had been very sandy, but from here on it was of fine, hard soil, opening into a large avenue, shaded by magnificent trees, then with a slight slope it runs into a large open space which is the centre of Bende.

We were soon conducted to his quarters by Okori, the biggest chief in Bende, and in the evening we had a long talk with him and several other chiefs of importance. They were exceedingly friendly, and informed me that in relation to us the town was divided, the greater portion being for us, the lesser with the Aros. They then expressed a desire to sign a treaty with us; but when I pressed the point they shuffled out of it and said that they could not do so without first of all consulting the Aro chiefs, who controlled their market. When they had left, Ja Ja informed me that the Aro head men had on the previous day come in a body to the Bende chiefs and asked them to stop the white men from entering Bende—a statement that I had no reason to discredit, for from our first contact with them, and more especially since our advent here, the Aros had been decidedly inimical.

The following morning, Sunday, the 6th, the Bende chiefs, along with our own, called again very early, more as an excuse for a drink of gin, I imagine, than anything else. However, I had a talk with them, from which it was clear that they are a timid, peaceful people, entirely under the thumb of the arrogant but energetic Aros, who have held the monopoly of the trade from the interior to the water-side beyond the memory of those now living. As a practical proof of Aro arrogance, and of the domination they exercise through this very monopoly, a little later on I was informed by Ja Ja that he and our chiefs had had a friendly talk with the Aro and Bende chiefs, and that the former had informed him that they had closed the market against us, and told him to warn all our people that they were not to go near the market place.

Events were now evidently beginning to shape themselves, and the hitherto passive attitude of the Aros had begun to assume an active form. To avoid, therefore, any action on our part that might be construed into interference, or that might in any way lead to friction, I issued the most stringent orders that no one belonging to the expedition should go into the town. Indeed, from what I could see or learn, there was no great anxiety on the part of my men to go any further.

I then instructed Ja Ja to give notice to the Bende and Aro people that it was my intention to hold a public meeting that afternoon, to which I invited them, and at which I hoped to see them all, so as to explain the object of the expedition. In answer to this the Bende chiefs expressed their willingness to be present, but the Aro chiefs replied that they would only come if the chiefs of Bende sent for them, as the town did not belong to them (the Aros), but that they were living in Bende under the protection of its chiefs. The covert insolence of this message I took no notice of, further than to politely ask the chiefs of Bende to request the presence of the Aro traders at the meeting. This they immediately did, informing me that the Aros had consented to come. The meeting was held in the Central Place, at 2 p.m., and was attended by a crowd of at least 5,000 people, who, when we sat down,

formed a huge circle round us some thirty deep. Confronting us were the Aro fraternity and that portion of the Bende people who are altogether subservient to them, while to our left and behind us were the Bende chiefs and their following, in whose quarters we were staying.

From the very commencement the Aro people showed by their looks, gestures, and the generally-offensive attitude they adopted, that they resented our appearance and were determined to oppose us in every way. This was not only apparent by the scowls on their faces, by keeping their hats on their heads, and by many other outward mannerisms, but by the noisy disrespect they showed us, as well as by the insolent way in which they totally ignored our presence; and it was quite evident to me that they were playing a bold game of brag, so as to impress the Bende people with the striking contrast between their power and our weakness. When after much difficulty I managed to obtain silence, I got up and spoke at length and to the point, confining myself to the questions at issue, viz.:—

1. The opening of the roads,
2. The expansion of free trade and the abolition of monopoly,
3. The abolition of slavery, which is entirely in the hands of the Aros,
4. The peaceful attitude and intentions of the Government I represented.

For two hours I held forth, explaining to them every point clearly and carefully, amid grunts, groans, and strong expressions of dissent from the Aro ranks. And when I finished the uproar that followed was quite appalling.

A consultation, lasting twenty minutes, then ensued among the Aros, and when it was over, an old man, tall, thin, and truculent, with sharp, eagle-like features, stepped out as spokesman, and from his defiant manner, it was quite evident this old man had been selected with a view to cow and overawe us. But when in him we recognised the man who in the morning had come to our quarters, clothed in the cast-off livery of a city alderman, and begged a hat of us, we could not but feel amused. To show his contempt for the white men he had discarded the livery, and appeared now in only a waist cloth; but on his head, which had then been bare, he now wore a huge "smasher" hat that one of the other Aros lent him for the occasion. This, of course, was purposely intended to accentuate the insult that was meant for us; for the natives invariably uncover before white men, and, unfortunately, Ja Ja without my knowledge had at the outset told the Aros to uncover, an order that not only raised a storm of indignation, but which produced a bad and exactly opposite effect, for every Aro that had a hat put it on. Leaning on a long staff, the Aro orator held forth, and when Ja Ja tried to interpret what he had just been saying, he shouted him down in a domineering and overbearing manner. For a few minutes there was a tremendous uproar, but Ja Ja held his ground, and stuck to the point that it was necessary for him to translate sentence by sentence, as we did not understand his language, and he (Ja Ja) would not be able to remember the whole of his speech. The old man having at length been brought to reason, order was restored and he resumed his speaking. He was an orator

of very high order, judging from the unceasing flow of language and the fierce denunciatory eloquence at his disposal; but he was pleading for his country's cause, and its one little ewe lamb of monopoly. He denounced and vituperated the unwelcome and uncalled for advent of the interfering white men. Yet I could not help admiring the orator for his vigorous acting, and the remainder coming in, as they did, like a Greek chorus, with expressions, or rather grunts of approval as the old man made a hit or scored a point. The speech was indeed a bold bid for the monopoly of centuries, and a diplomatic attempt to avert the free trade which for the past few years has been threatening. He concluded, with an action intensely dramatic, and pointing the finger of scorn towards the sky, the old orator exclaimed in a tragic voice, which culminated in a terrific yell: "The white men may have come by the sun, they may have come by the moon, or they may have come through the clouds, but the sooner they went back from where they had come, and remained there, the better. For they—the Aro people—would neither be answerable for the consequences, nor responsible for their heads, which had been sent for by their elders from the Long Ju Ju Country." For a full minute there was dead silence, the old man glaring around him with an air of triumph; then a yell of derisive applause burst forth from the Greek chorus, and the orator who had been pleading his people's cause stalked out of the arena, and we saw him no more.

Once more I got on my feet, and I told the Bende chiefs that before replying to the Aros I would like to hear what they had to say on the subject. For several minutes a very lively altercation ensued between the Aro and Bende chiefs. At last, however, Chief Okori stood up and said that the Bende people were quite willing that all roads should be open to the Waterside people. They, as owners of the market, naturally wanted to see every one come to Bende and trade, for the more that came the better it would be for them. Whereupon he sat down, amid a chaos of noisy remarks from the Aros, and it was quite evident that he had taken his cue from them, and that it was more than he dared to speak his mind freely. Another longish interval occurred, during which the Aros and their Bende partisans held a consultation that, judging by the heat and violence of the discussion, took some time to arrive at any unanimous decision. Quite suddenly they all rose in a body and advanced, evidently by pre-arrangement, in a threatening way towards us, and as if they were about to sweep us out of their path, but we sat perfectly still and quite unmoved, and when within ten yards of us they halted, and one of the number stepped forward and spoke as follows:—

"That the other Aro factions who traded with the interior, having accused them of bringing the white men to Bende, they would be very thankful and easier in their minds if I would state openly before the whole meeting that they had not brought us there. They further begged of us to leave Bende at once, as it would be better for us and for themselves if we did so, for they could not hold themselves responsible for our safety, and that if anything happened to us their markets would be ruined. Finally, they assured us that the elders at Arun were very angry because the white men had come to Bende, and serious trouble was certain to follow if we did not go."



After the fiery language of denunciation that had fallen from the lips of the ancient orator, and the imperious order he had hurled at us to instantly quit Bende with bag and baggage, here indeed was a sudden change of front. The fact was the Aro people were split up into factions on the question of trade—factions that were not merely jealous of but inimical to each other—and here at Bende, the central market and common meeting ground presumably of all factions, they were not nationally united, although they had struggled hard to make it appear so. Even here, where at least it would have been expected that trade jealousy, rivalry, and all such petty differences would have been sunk, and that every faction would have joined hands to meet or repel a danger that was common to all, there was no bond of unity, no patriotism was displayed, every faction playing its own game, which consisted of each one trying to play off against the other. And what occurred later on convinced me that this conclusion was correct; for during that same night the orator who had spoken so vehemently against us came and told our chiefs to inform me that he had done so under compulsion. He was an inland trader, and it was the Waterside traders who had forced him to speak, and who, when they had consulted together, had put all the words that he had said into his mouth, as they wanted to throw all the blame on to the interior traders, so as to make themselves appear blameless in the matter. Mr. James and myself can certainly vouch for this, because we both noticed that while the veteran was speaking, one man in particular, who stood by him all the time, frequently, and others of the Greek chorus occasionally, prompted him.

To resume, however. In reply to the Waterside Aros I once more got up and declared openly before the whole meeting that neither they nor any one else were responsible or to blame for our presence in Bende, but that I alone had brought the expedition there, because, in the interests of the people who were under my care, I considered it my duty to open the road. As to the first Aro speaker, I begged to thank him for the cordial welcome he had extended to us on our arrival, and for the kind advice he proffered as to our leaving it. I would point out to him, however, that Englishmen were not to be frightened by bounce. My intentions were to leave Bende, as the stench was too offensive and injurious for white men, but that I would go when it suited me. As to the depreciation in the value of tobacco and other goods of which he complained, they must not forget the fact that in the early days, when a head of tobacco fetched ten or more manillas, they as sellers commanded their own price because the buyers were altogether ignorant of its commercial value, but now these people knew more than they did then.

Finally, I had nothing more to say, except that, big as the Aro people undoubtedly were in their own estimation, the first born of the first Father, while we were only the offspring of the second Son, as they had informed me, they must not lose sight of one very important fact, which was that the white men whom they affected to despise were the makers and providers of all the goods with which they traded. As their friends, I advised them therefore to consider well what the consequence to them would be if the white men suddenly refused to supply them. The words had scarcely been translated by Ja Ja, when the Aros



in a body turned about and walked away with a noisy swagger, bringing the meeting to an abrupt—but, on our part, welcome—termination. We then returned to our quarters.

In the evening, Okori and the friendly Bende chiefs called on me, and suggested my signing a treaty with them in secret; but this course I would not hear of, informing them that such an important matter as a treaty must only be transacted at an open and public meeting.

Many wild rumours were afloat that evening, and also the following morning, one to the effect that the Aro people, had they known we were coming, would have arranged with the Abam people to stop us. Abam, from what I could find out, is a country a day's march, about twenty-five miles, from Bende in a northerly direction, and on the road to Arun, or the Long Ju Ju Country, which is the headquarters of the Great Fetish, and about a day's or half a day's journey further on from Abam. These Abam people have, it appears, a great reputation as fierce fighters with swords among the people of the surrounding country, and I was informed that they were in the habit of hiring themselves out as mercenaries. One thing is certain, that they are carriers, and do all the transport work of the Aros, who are too advanced to use anything but their heads. Later on a report was in circulation that a messenger had come from Arun to say that if the white men did not leave Bende at once their heads must be cut off at once and brought there. Again, we heard that at a meeting held at Arun, Wosu Torti's father had held out against our summary execution on the ground that if the white men were killed, his son, who was also living near their country, would also probably be killed. Needless to say that we took not the slightest notice of any of these alarmist rumours. In the morning—Monday the 7th—the Waterside Aros sent us a peremptory message to leave Bende at once, for they had just received a final order to send our heads to their elders at Arun; and if we did not go immediately there would be trouble, for which they could not hold themselves responsible. To this I replied that we were going at mid-day, but only on one condition, viz., that when we marched out of Bende no Aro or Ibo people were to show their faces, but that they were to remain in their houses, and that if any Aro attempted to molest or insult one of the meanest of our carriers, I would have no hesitation in shooting him on the spot. This may appear to have been overbold, but I flatter myself I understood the people I was dealing with, as the effect it produced was certainly most efficacious; for as we marched out Bende might have been a city of the dead, so lifeless was it, and the few people we did see ran like Red Shanks on our approach.

I have said little or nothing about the place or people, for the simple reason that we were practically confined to camp all the time, and neither the Aros nor even the friendly chiefs would impart any information about the trade or the markets. The town, or what we saw of it, is large and scattered, the houses or huts being small and low, each chief having his own quarter, and it is one of the most insanitary places I have ever been in. It is situated on a hill at an elevation, I should estimate, of 1,000 feet, in a splendidly wooded country; we were unfortunately unable to take any observations, not being provided with scientific instruments, nor indeed to collect any accurate or reliable information regarding the resources of the

country. There were no visible signs of quartz or granite, nor, as far as we could see, of any minerals; but a country so well wooded and watered, and with a soil so excellent, ought, I should say, to offer immense advantages for the cultivation of coffee, cotton, jute, etc., for which it is well adapted.

The people belong to the Ibo race, as do also the Aros. There is nothing particularly distinguishing about the men, who are moderately strong and well built, but among the women I noticed some very fine-looking specimens.

The Aros, on the contrary, are, intellectually and physically, far superior to the other branches of their own race, over whom they domineer with an iron hand concealed under the silken meshes of deep diplomacy. With their headquarters at Arun, they are, from what I could learn, divided into fourteen families, or factions, that have outposts scattered all over the country from a long way into the interior down to the Cross River on the one side, and the Niger and Opobo Rivers on the other. Consequently they are looked upon by the other Ibos, Quas, Ibibios, and other tribes with whom they are in contact, as great travellers, and hence the aggressively arrogant attitude they usually adopt. With all their bounce they are not, however, in my opinion at least, a fighting race; relying on the wiles of deception, and more especially on the widespread reputation and blind belief that their fetish has earned for them. The information that the Abam people fight as well as carry for them, I quite believe to be correct. That the Aros, however, evidently believe in themselves, and that this belief is to a great extent justified, is not only seen in the hold they everywhere have, and in their own over-bearing swagger, but in the bearing of their women, who, I must say, are ever so much handsomer and finer than of any of the tribes in the Niger Delta. Indeed, they look quite a different and altogether superior race. In the arrangement of their head-pieces alone they are to be distinguished from any of the other tribes, for the wool is pulled out to its utmost length, coiled and curled by the aid of combs, grease, and pieces of wood, into shapes so stiff and so fantastical—some of them the exact image of the ancient Greek and Roman helmets, others like the three-cornered, and others again into the pattern of the cocked, hat—that one wonders what can induce them to carry about and sleep with a burden that must be not only heavy, but very uncomfortable. There is, as far as I can see, but one answer to this—vanity. For even in these western wilds of Africa fashion holds her imperious sway at the expense of ease and comfort.

---

## NEW BOOK.

---

“ON THE BROADS.” By ANNIE BOWMAN DODD. With about 30 illustrations by JOSEPH PENNELL. 332pp. (no index). Macmillan and Co. Limited. 1896.

MEMBERS wanting a new holiday ground cannot do better than take this very interesting description of a part of England not much known in Lancashire and visit this watery lotus land under Miss Bowman's guidance. The illustrations add to the value of the book.

## A DIARY OF A SURGEON WITH THE BENIN PUNITIVE EXPEDITION.\*

By FELIX N. ROTH, M.R.C.S., and L.R.C.P.

COLONEL BRUCE HAMILTON, Major Landon, Captains Carter, Ringer, and Searle, and Gregory, of H.M.S. "Theseus," myself, with 260 Protectorate troops, one Maxim, two seven-pounders, and carriers, arrived at Ceri from the first landing-place, Warregi, at 4 p.m. on February 6th, 1897. We are up here before the naval men, in order to cut a path for them and clear ground for their camp, and look after its sanitary arrangements. As soon as we arrived we encamped in the native village; pickets were out for the night, and just at the present moment the officer is going his rounds, the bugle having sounded the last post. It is a strange life, black troops lying about all over the place, laughing and gibbering like a lot of monkeys. A dull, cloudy night, and plenty of mosquitoes to keep us all awake, gives a man time to think what the future will bring, when once we have started into the Benin Country.

Ceri, February 7th.—I slept last night on the ground in a native hut, it being too late to rig up a bed or couch. This morning I looked after the sanitary arrangements of the camp for the naval column—that means we have to make everything comfortable for the naval brigade, which is expected on the 10th or 11th of February. We are called the advance guard, and have plenty of work. We cut roads, build trenches, get up stores from Warriga; in fact, we have to do all the nursing, as it were, so that the naval men may not be exposed in the severe climate, and may have as little as possible to do. Searle and Carter are looking after the troops to-day, Landon and Ringer are busy with the carriers, arranging stores, and Gregory, of H.M.S. "Theseus," is taking positions.

Ceri, February 8th.—We are still at this place, getting things—houses, etc.—ready for the naval column. We did a lot of work to-day. I found a spring, and have dammed it up, so that a large number of men can draw water from it. To-night Major Galwey, our Consul, and Executive Commander Bacon, have got a canoe and boys, and are reconnoitring up the Ologbo Creek, to find out if there is any branch connecting with Benin City. We think there must be a branch, as we cannot understand how else the Benin City people can obtain their drinking water. It is rather a risky undertaking for the two men, but they are both cautious, and will, no doubt, bring back a lot of useful information. They cannot go during the day, as when we tried a little while back, one of our officers was fired upon. In so far as I can find out we will cut a road from Ceri to a position opposite Ologbo Town, which is a few miles distant from here. We will then shell Ologbo itself, land some black troops, and build a

\* Communicated by H. Ling Roth.



suspension bridge, which has been prepared by the naval men. The span is about 70 or 80 yards; we are not sure of the length, but will know in a day or two. We will then most probably form a big base there, land the naval brigade and stores, etc., and make a start to cut the bush path which leads to Benin. The following is to be the order of procedure:—Captain Turner, of the Protectorate, will scout with about 60 Bonny men, the same who did the scouting for the Ashanti Expedition in 1873. These men will work through the bush to find out where the natives may be lurking; they will be supported by our black troops, but how many I do not know. Then come the bush cutters and more black troops, with two doctors, one being myself. We will do this till we get close to Benin, when a naval column will come up and help to take the city. This is to take place within seven or eight days. There may be a little fighting, but such care will be taken that I think few men will be killed. Urini is the native name for Benin City. So far all the white men are fit; I trust few will go down with fever.

Ceri, February 9th.—It is really quite a sight to see the black troops quartered in this native town of Ceri; there are 250 of them. One is tumbling over them all day, or rather all night, as during the day they are hard at work in the camp which we are making for the white troops here. The officers' mess is also quite a sight; we are thirteen, all told. Searle, who is working like a nigger all day building huts in the camp, is also looking after all the provisions for the mess, and I am mess president, looking after the food, of course, and bossing the black boys and cook, and seeing that the water is boiled before distribution. I seem to be busy all day, and when night comes I feel that very little has been done. Last night we sounded the assembly, so as to get the men to their posts, just as if we were having a night attack from the natives. The men turned out well; they were all dressed and in their accoutrements and at their posts in about two and a half minutes, which is considered very good. After inspecting them, to see that they had come to their proper places, we dismissed them to their quarters. The gunners under Searle were prepared for action in the short space of two and a quarter minutes, all fully equipped. It seems strange to sit under a thatched roof on four posts, and eat our food in the open, and then after dinner to clear away and write letters. As I sit here at the present moment a big ant walks calmly over my paper, or some other insect drops from the roof down my neck; as of course we all wear shirts unbuttoned at the neck, we give the insects, etc., every chance. Then, again, the chattering of the native troops is rather astonishing, one would think we were really amongst a lot of women; unfortunately we are not, God bless them all the same. Many amongst us will wish for their tender care to nurse us as we go down with the fever, or by the enemy's shot.

Ceri, Feb. 10th.—I have had a talk with Locke and Boisragon, and from this conversation I gather it seems that it was rather Phillip's fault that the massacre took place. The members of the expedition all tried to persuade him to give up the idea of going, even Crawford, who was a sort of dare-devil, was against his going up, and several of the friendly chiefs went down on their knees, begging him not to go, as they felt very certain all would be killed. Yet after all this



warning, Phillips persisted in attempting to go to Benin, and even gave orders that no one should wear arms, except well-concealed ones. But as the members of the expedition wore only shirts and trousers they could not even carry revolvers, and so left them in their boxes, which the carriers had on their heads. Yet there must have been some sort of treachery, as the King of Benin, to a certain extent, was willing they should come up and see him. Besides the Bini did not attack them at once, as they wished to find out if the expedition were armed or not, and also have time to make an ambushade. All the white men who were massacred behaved well. Dr. Elliott again and again rushed in among the natives, who were several deep, and who were armed with long flint-locks, and although he was fired at, he struck right and left at them with only a stick. Poor Maling, too, did his best, and like Crawford, while dying, told the others to run for their lives and leave him. A pity such fine men should fall in such a treacherous manner. Little Chumpy Lion has a seven-year-old nigger servant, who has been taught, whenever he brings a drink to anybody, to say the following:—"God bless the Queen, and I hope you will knock hell out of the King of Benin." He says this while saluting, with a most serious face. The Admiral and Staff, with our Consul-General, came up to-day to look about the place; it was astonishing how he managed to walk the distance from Warriga to Ceri, it was so very hot. He will be carried back, and quite right, too, as he is rather a heavy man. Captain Egerton, who is at the head of the staff, decided, in consultation with the others, to build a bridge across the Ologbo Creek, about half a mile higher up the creek than this village of Ceri. It will be a swinging one, made of steel wires, and attached at each end to trees on each side of the creek, which we find is about 120 feet across, something like the old chain pier at Brighton, the footpath being swung in the same manner. The gear for the same will be brought down the river to-night, and to-morrow the engineers start work in earnest. While this is going on a party of black troops, over one hundred strong, with a seven-pounder and a Maxim, will reconnoitre inland for about a thousand yards. We will have scouts in advance, and I am to accompany them as medical officer; I hope the natives will not spot any of us. We know of, and also notice, natives in hiding opposite Ceri. We are also to be supported by an armed launch and surf boats full of men well armed with Maxims and rifles. I heard to-day we are most probably to make a start for Benin on the 11th, but I think it must be later. Before I proceed I must mention that a column called the Sapoba Column is to go to Sapoba, and is to consist of men from H.M.S.'s "Phœbe," "Alecto," and "Widgeon." Another column, the Gwatto, is to consist of men from H.M.S.'s "Philomel," "Barrossa," and perhaps "Magpie." This last column is to destroy all the Bini towns on the eastern bank of the Gwatto Creek as far as Ikuro. Both columns are to be assisted by canoes, and are to patrol the river with their boats, and prevent fugitives from passing. Seven more men joined our mess to-night at a moment's notice. Their chairs were ammunition boxes—one dish, the *pièce-de-résistance*, was a washing basin, containing an Irish hash. Being short of knives and forks, one man was obliged to have a mouthful, and then pass the table cutlery to the next man.

Ceri, Feb. 11th.—The boat scouting party, which started this morning, consisting of a hundred men under Colonel Hamilton, went up the river about a mile and a half, and landed on the other side, where a few huts were seen. From there a short trip was made into the bush, but the ground being very swampy, it was obliged to return after traversing only a few hundred yards. Another party, under Searle, with the same number of men, a Maxim and seven-pounders, acted as reserve on this side of the river. It is now found to be impossible to throw a bridge over the creek, and to-morrow a party is to make a start from Ologbo towards Benin. All the Protectorate troops, under Erskine and Turner, will cross the Ologbo Creek. The scouts to proceed first, to see that we are not ambuscaded. Colonel Hamilton will be in command, and I am to go as medical officer. We have been busy all day preparing loads for the carriers. I am in charge of the mess and the mess gear, and, as the fellows are a hungry lot, it can be easily imagined what a work I shall have to do to feed them. Up till now they have been very good, and have hardly grumbled or sworn at me at all. Captain Boisragon is invalided, and leaves for home at once; we do not think he is fit for active service, as he is still suffering from a shock due to his very severe experiences during that awful massacre of a month ago. The weather is very hot and very dry for this country; it has not rained since we arrived here a month ago. I have asked Consul-General Moor, in case I am knocked over, to sell all my effects; we expect some heavy bush fighting to-morrow. A marine from H.M.S. "Theseus" died yesterday from heat apoplexy, but this is nothing, as many more will go down similarly. At present the men are in splendid condition. I have just heard that there has been a brush with the natives at Gwatto, four blue-jackets and an officer wounded. I am too busy to write more news, but I hope to do so to-morrow. We had a little surprise to-night, as some shots were fired into camp, and the fellows got startled.

Ologbo, February 12th.—We started from Ceri yesterday, at about six p.m., in the launch "Primrose" and in surf boats, with 250 black troops, two Maxims, one seven-pounder, and half a company of blue-jackets, with one Maxim and a rocket tube. As I got my orders about half an hour before we started, I was unprepared. Luckily, I always have my waterbottle filled at night, but I had no rations. As I passed the Admiral's quarters I noticed a nice block of naval chocolate lying neatly in some paper outside his door. I stole that chocolate. We went up the Ologbo Creek for about three miles, until we reached Ologbo. We shelled the village, and cleared it of the natives. As the launch and surf boats grounded we jumped into the water, which reached to our waists, at once placed our Maxims and guns in position, firing so as to clear the bush where the natives might be hiding. We rushed on some hundred yards, again put our guns in position, and, in conjunction with volley firing, again cleared the bush. We expect the second division to come up to our support in about two hours' time, as we sent the launch and surf boats back to fetch them. While holding the place the natives crept up to us several times, howling at the top of their voices, and firing into us. They attacked us first in the front, and then on each flank. Luckily we kept them at bay with volley firing and our Maxims, and only Captain Coe, of the N.C.P. Force,

were severely wounded in the wrist. But luckily several other officers and men were hit by spent bullets only. After that we had drinks, and enjoyed the Admiral's chocolate. Soon afterwards more men came up, and we took our troops into the bush and cleared the natives out as well as possible. This path to Benin City is only two or three feet broad, allowing sometimes two men to walk abreast, but as a rule the men are obliged to walk in single file. The natives showed some cuteness, for on one side of the road they had cut a track for some hundreds of yards, so as to be able to fire on us as we went up. Luckily for ourselves, we found this ambushade at once, thanks to our scouts! and troops were sent up it. We went straight on for about three-quarters of a mile, with Maxims working in front and on the flanks; at the same time volley firing was kept up by the troops, so as to clear the bush on each side of us. We arrived at a small village, which we cleared with Maxims and rockets, and then rushed it, the natives clearing out right and left. We then put out pickets all round the place, and under their cover troops and carriers cut down the bush, so as to clear the place and allow us to see in case we were attacked by the natives. We camped here for the night, putting out double sentries everywhere. We shall remain here till we get up our supplies, consisting of ammunition, rations for officers and men, and particularly water, which has always to be boiled. The usual routine of bush fighting is to use the Maxims in the front, and to keep up volley firing on the flanks by the troops. The men then rush ahead and again clear the bush, and so on. This first division is under Colonel Hamilton, a most charming man, very quiet, and "all there," very energetic and cool, too; the climate does not seem to affect him much, although it has been very hot and very damp. The bush looks lovely; there are any amount of big trees about the place, and the green is of a rich colour, but it seems quite a mistake that there should be such a lot of hostile blacks about these quiet places. The village is, as usual, very straggling; still it gives us good shelter at night. We have been lucky so far; there has been no rain, and we all hope there will not be any before we get to Benin City. At Ologbo Captain Campbell, of H.M.S. "Theseus," in charge of second division, is making a camp, arranging everything, getting our supplies over from Ceri, boiling the drinking water, building a hospital, and making sanitary arrangements and all ready that may be necessary for a good camp.

February 13th.—We had rather a busy and exciting day yesterday. About 60 black scouts, under Turner of our force and Erskine of the Navy, came up to-day to scout in advance of us to find out the movements of the Natives. The Admiral had been rather seedy after his walk in the sun from Warriga to Ceri; he got overheated; but he told me he was better yesterday, and I think he will be all right to-day. Our bridge could not be made, as we should have had to walk three miles through the swamp opposite Ologbo. I had a chat with Moor, our Consul-General; he told me the following: On February 10th Gwatto was attacked and occupied by naval men; one officer and two men of H.M.S. "Widgeon" severely wounded, one officer and one man of H.M.S. "Philomel" slightly wounded. On February 11th Sapoba and roads at back were occupied by naval men.



Whilst stockading camp there Pritchard and one man of H.M.S. "Alecto" were killed. So our column so far has fared the best; but it won't last long, and we shall have to fight our way up to Benin City. Some more men have gone down with sunstroke, but I have not seen or heard of any cases of malarial fever yet. Smallpox has broken out among some of the Sierra Leone carriers; but it is of a mild sort of form, and somehow it has never been known to have been communicated by the blacks to the white men. We make another start late to-day or to-morrow; we have seen no natives since yesterday, but some have crept up and fired into us. We believe they are concentrating their forces at the next village, or somewhere on the road to Benin City, for their final stand. Of course they may ambuscade themselves and try to stop us, but we will succeed in the long run, however many men we may lose. We are now in the Bini Country, and the houses in the villages are thatched in a different way to the other villages we have passed so far. They are covered with leaves only, tied up in bunches, and not with big palm leaves. Then again the walls are made with split wood, and not of mud, as in the other places. We shall have great difficulty in getting water up here, and it is uncomfortable to be without it. We are dirty and dust-begrimed, unshaven, and sticky; our clothes are wet, and at night all the horrid animals of the bush crawl over us and sting us.

Cross-Road Camp, February 15th.—We left the Ologbo Camp yesterday morning at 6 a.m., but a little before 3 a.m. we had a night alarm, the natives came round part of the camp, beat the tom-toms for our edification, and kept us awake and on the alert, ready for our start. Allman, the principal medical officer, and myself, of the N.C. Protectorate, dressed and got pottering round, getting our carriers in order, and collecting stretchers and hammocks for the wounded. Well, we started at daybreak, Colonel Hamilton in command, with 260 black troops, one rocket tube, two Maxims, one navy Maxim, two seven-pounders, a company of marines, and 40 scouts. We proceeded up the Benin road for about three miles, when the natives, who were in ambush, fired upon us again and again. We cleared them out with Maxims and volley firing several times, but they again came on and fired into us. We again cleared them out of the bush with the Maxims and forced them to retire, and after our column had done another mile or so, we formed camp for the night. Our firing was pretty hot, the rattling of the Maxims and rifles, the shouting of the officers, the howling of the enemy, and the excitement amongst our own carriers is beyond me to describe. The excitement in the dense bush, the smoke, the working of the seven pounders, and the whizzing past of our rockets put the fear of God both into ourselves and the natives. I picked up one man shot through the thigh, and another through the lungs. Luckily no white men were wounded; we all got off scot-free. We marched in single file, the scouts in front, followed by a half company of black troops under white officers, then followed a Maxim, with one in reserve; myself, with stretcher party, were close behind them. We seem to be doing all the fighting up at this end of the column. I cannot tell the order of the middle and the rear part of the column, which is nearly three miles long, being much too busy at my end. We had now cleared the natives out of their camp,



and the troops, in conjunction with my stretcher party, started to build a hospital. This consists of four upright posts, fixed into the ground, and lashed together at the top with cross-pieces, all tightly fixed together by a native creeper called "tie-tie." The roof consists of the hammocks laid on the cross-pieces. Being at the head of the column, where all the fighting takes place, most of the wounded come under my hands first. Every time a man is wounded the whole column stops, the path being so narrow we can only march in single file. It is impossible for me to do much for the wounded. If a man is bleeding badly I simply put on a tourniquet or a dressing, and leave him on the side of the path, to be picked up by Allman and his stretcher party, who is at the rear of the column. By the time I have built my hospital Allman comes up with the wounded and the field cases, and we at once start to do our best for them. Everybody has complimented us on our arrangements, and the quick way we erect our hospitals. We make the poor wounded chaps as comfortable as possible, and despatch them at once to our base at Ologbo. We sent a batch down to-day at 3 p.m. I must mention that our black troops with the scouts in front and a few Maxims do all the fighting. I am the medical officer, with them in the thick of everything. My black boy Charles carries my bag, which contains a few bandages and tourniquets, and I have also with me four hammocks and four stretchers. In fact, I am the first aid to the wounded. Allman follows up with a field case and another stretcher party. We extracted the bullet from the wounded man's thigh, but could do nothing for the man who was shot in the lungs. These black men heal wonderfully well, and take everything as a matter of course. At about 3 p.m. part of the column started to burn a village, but after nearly losing ourselves in the bush and struggling through the same for seven miles, we were obliged to return before dark, accomplishing nothing. Our camp is a great clearing made by the natives; the trees are nearly 120 feet high, with much foliage at the top, the sun hardly being able to penetrate down to us, which is lucky, as the place is thus kept cool.

Obaraté, Feb. 16th.—We have to-day had a real lively and hot day, fighting our way through the bush. We left the camp at the Cross Roads at 11-15 a.m., as the first division entered it. After advancing for about two hours at the rate of one mile an hour, the enemy commenced firing at us along the whole line, which was in single file, and nearly a mile long. At two places the natives broke into us, but we soon cleared them off. At the head of the column, where I was, the firing was very heavy. Luckily no white man was hit, but I do not know what may happen later on, as we get nearer to Benin, where we are certain to meet with much greater opposition. One black soldier was shot in the head and killed, one native scout was shot right through the neck below the jaw, and one little carrier was shot in the cheek. These men were dressed and brought along with us, and ultimately sent back with an escort to the base. But I am digressing; time after time the natives came on us, but our Maxims and volley firing cleared the bush, and we advanced steadily till we came to a clearing. It was a native camp, which the natives had just left, and part of the advance guard, going on, occupied the village of Obaraté. It was soon taken, hardly any firing being necessary, as the natives had cleared

out, and the rest of the advance guard coming on, we encamped there for the night. We were all very tired and slept well, although we first cut down the bush, and put sentries all round the place. It has never been known that the natives attack at night; this holds good all the world over, still we always take precautions. We have been short of water, and are sending some hundreds of carriers out to get some, and if it comes back in time we will proceed to take the next village on the road to Benin. We can only get about two quarts of water daily per white man, so there is no washing to be done, and we keep away from each other as far as possible, and as we have no change of clothes, or very little, and as the weather is very hot, one can imagine the beautiful state we are in. From the last camp to this village is only about four miles, but fighting and stoppages kept us on the road from 11-15 a.m. to nearly 4 p.m. The village we are in is rather pretty. There is an avenue of cocoanut palms about 40 feet apart, the road running between them; outside this again are the native huts, extending two and three deep, the avenue being about a third of a mile long. We have had no orders about starting yet. One of the officers went away with some troops to look for water, and just now we hear firing, so I suppose the natives have been coming on again. I shall be glad when I am well out of this. We all think it is a settled affair that we shall get medals and clasps. I had to stop just now at about 1 p.m., as the natives kept crawling up and potting at us, Colonel Hamilton ordering us to get under cover; I take advantage of it and write a few more notes. We have been busy all day; the Admiral and Consul are coming up from the Cross-Road Camp. I hear we are to start to-morrow, the 17th, with the advance column, part of the first division, and some of the staff, so it will be a long one, extending over several miles, the men being in single file. The intention is to do the next seven miles to Benin as quickly as possible in two days, but it is hard to say whether we shall succeed, as we do not know the position of Benin City, and all the information we can get is from a dumb man and from a slave boy, who has only been there once. I think we are in a fairly safe condition now. We have just heard that a number of dead natives were found near Ologbo, who were shot down by our volley firing and Maxims, when we landed there for the first time some days ago. This morning I was sent out with a hundred men and officers and two stretchers with the scouts to reconnoitre about a mile off. We got to a clearing and rested. Suddenly the natives started potting at us. We returned the fire, but one of our scouts was shot through the head and killed ten yards from the path. The Admiral is not in very good health. In chatting with him he informed me bodily he was all right, but that he could not sleep at night, as he had so much in his mind with respect to the expedition. Moor looks very fit, perhaps a bit anxious, but otherwise very cheery, and always chaffing me. O'Farrell went down with fever as soon as he arrived at Ologbo, so he was sent back to the base. I am up with the advance column and at its head, continually under fire, so shall not be astonished if I come back with a bullet or two inside me. Considering the bush we have to get through, we have been very lucky so far. We have lost no white men yet, as they did on the Sapoba and Gwatto routes. But there the naval men had no black troops with them, and

rather exposed themselves to the native fire. We know this sort of work, and are much more careful. Up till now we have only lost two and about four wounded, and one white officer wounded in the wrist. This is considered good; in fact, it is not one per cent. We get no water for washing, and hardly any to drink; what an awful-looking lot we shall look in a day or two! I hear when we take Benin City the N.C.P. forces will hold the place, while the naval men will at once return to their ships, and if they get home at once will divide all the honours with the few Special Service Officers who have been sent out here to help us, whilst we, poor devils, will be out here for another twelve months and get no *kudos* when we get home, although we are doing, and will be doing, all the heavy work! But such is life! I must hurry up, as it is getting dark now. No news or despatches will be sent off till we take Benin City. We are completely cut off from our base for the next two or three days, as the case may be. The Cross-Road Camp has been well fortified, and should we be badly attacked, that place will be our only hope. It is wonderful how thirsty all the men are here. There has been no rain; marching in the sun is dry work, and all the native wells we have passed are empty.

Awako Village, February 17th.—We left Obaraté this morning with the Admiral and staff and Consul-General. Colonel Hamilton led the advance. Our scouts and black troops, under English officers belonging to the N.C.P. Force, with a Maxim or two, cleared the bush with volley firing at the head of the column, as usual. Admiral Rawson, Moor, and staff are in the middle of the column, which is about three miles long. The carriers, who number about a thousand, carrying principally water, ammunition, and food, are well sprinkled with marines and bluejackets. The column consists roughly of 250 N.C.P. troops, 120 marines, 100 bluejackets, 30 scouts, 5 Maxims, 2 seven-pounders, 2 rocket-tubes, and about 6 medical men with stretchers, hammocks, and field cases. I was, as usual, at the head of the column, and continuously under fire. We left at 6-15 a.m. At 7 p.m. we came in contact with the enemy, a running fight being kept up till 10 a.m., when Agage Village was taken. We had dislodged the enemy from two of their camps *en route*. We rested here one and a half hour, and made another start at 11-30 a.m. Again a running fight was kept up, on and off, till 3 p.m., the Maxims and volley firing clearing the bush, when we reached the village of Awako, which the enemy had deserted shortly before our arrival. *En route* we dislodged the natives from their camp, which they had formed near the road. It is hard to imagine what our nerves are like after firing away and being fired at for so many hours on a blazing hot day and in dense bush, where the path is only broad enough for the men to walk in single file, and so dense that one cannot see more than a few yards on each side of one's self, and where we never get a glimpse of those who are potting at us. Anyhow we are all getting accustomed to it, and hope not to get potted, as we are so close to the city. We have cleared the bush around Awako, our usual routine, and camp here to-night. One man was shot to-day, and while making our camp to-night another was shot in the stomach and one in the face, but not seriously. We reckon we are about six miles from Benin City, and ought to take it to-morrow. The mind of the native is very obtuse



so far as distances are concerned, and that is the distance we are told it to be, but, of course, it may be farther away than we expect.

Benin City, February 19th.—We are now settled down in the above place. It is a misnomer to call it a city; it is a charnel-house. All about the houses and streets are dead natives, some crucified and sacrificed on trees, others on stage erections, some on the ground, some in pits, and amongst the latter we found several half-dead ones. I suppose there is not another place on the face of the globe so near civilisation where such butcheries are carried on with impunity. But to continue my narrative from the time I left off. On February the 18th we left Awako, with the whole force, our black troops leading. We marched from 6 a.m. to 1 p.m. without stopping, being fired on continually in the dense bush, which we returned with volleys from rifles and Maxims. At 1 p.m. we came to a clearing in the path, and about a mile ahead was the city. We put some rockets and seven-pounder shells into the place, and then started off again. Again and again we were fired into, and then suddenly diverged from the dense bush into the main thoroughfare leading into Benin, which is about sixty yards broad here. The firing was very hot. Then the enemy collected on the opposite side of the road in the bush and trees, and kept up a hot fire, killing and wounding a lot of our men. They had made a sort of embankment which, owing to the dense bush, could not be seen; they fired over this and then dropped down, so that until some of our troops passed this place and the natives were afraid of being cut off, they peppered us fearfully. I was in the middle of it, and feeling most uncomfortable, dressing the men's wounds, and stopping their bleeding to the best of my ability. I did not like it at all, as I then noticed, by the ping of the bullets, that the natives must be using repeating rifles, the firing being so heavy and quickly delivered. I have never seen anything like it before; the grass was in patches only about two feet high, and I was obliged to crawl with my black boy Charles from one wounded to another. Luckily the very severely wounded had been carried under cover by their comrades, and although I found several slightly wounded, with a little persuasion I managed to get them to crawl under cover by themselves, my stretcher party having disappeared, with the hammocks and stretchers, as soon as the firing commenced. Poor Captain Byrne and his company of 60 men were the ones that suffered most, the former being severely wounded in the spine, and sixteen of the latter killed and wounded. There was no naval doctor with these men, and as I was just in front, and seeing how they got bowled over, I was obliged to fall back and do my best for them. Ultimately I got under cover myself. While attending to the wounded I was informed that several more were lying out in the road, and as nobody volunteered to bring them in, I told my black boy Charles to do so. I could not go myself, as I was too busy tying up wounds, so Charles went out and brought in a wounded carrier. Shortly afterwards he again went out, followed by Lieutenant Beamish, and brought in a wounded marine. It was lucky neither of them were hit, as the natives tried to pot them from the ambush. All of us agreed that Charles behaved splendidly; he was very cool, and did not seem to mind the bullets at all, although they were hitting the ground and throwing up the sand around him. While under cover



I noticed three of the men in a dying condition; others were shrieking, cursing, and damning the natives. One man implored me to let him have his revolver back, that he might shoot himself, the agony he suffered being so great. As I was leaning over him, trying to relieve his pain, unseen by me he pulled my loaded revolver out of its case, but I was just in time to knock it out of his hand. Afterwards he tried to get hold of a marine's rifle. The poor chap must have been suffering agonies, while all around him the wounded and dying were shrieking for water, blaspheming the natives, and crying for help; others, again, were helping one another, tying up their wounds, and trying to staunch the bleeding. It was a curious sight to see the unwounded, with their arms round the necks of the wounded, talking to them in tender, womanish words. Every now and again I could hear one man saying to another softly—"All right, don't give way, I'll look after you—I won't let the natives get at you—I'll kill and revenge those brutes," etc., etc. All these expressions, intermingled with oaths, but in a nice way, trying to soothe the wounded. I wish I could express here what I saw the men must have felt for one another. The whole thing was most heartrending. In the meantime the main column had rushed up the big thoroughfare, but what happened I cannot tell you, as I stayed behind with the wounded. Shortly afterwards the rear of the main column came up to us, and the poor, wounded men felt somehow safe again. By this time the head of the column had rushed the King's compound. After dispersing the natives with Maxims and volley firing, Benin City was ours. When the expedition started the authorities had only a slight idea of the position of Benin City. The fetish, too, being very strong in the Bini Country, it was impossible for us to get any guides, and we had to rely for the path which led to Benin on two human beings—one being a dumb man and the other a small slave boy, as already mentioned. Between these two there was generally a discussion as to which was the direct and shortest road to the city. We always took our chance, and relied mostly on the man, and luckily hit off the right road the whole way.

As we neared Benin City we passed several human sacrifices, live women-slaves gagged and pegged on their backs to the ground, the abdominal wall being cut in the form of a cross, and the uninjured gut hanging out. These poor women were allowed to die like this in the sun. Men-slaves, with their hands tied at the back, and feet lashed together, also gagged, were lying about. As our white troops passed these horrors one can well imagine the effect on them—many were roused to fury, and many of the younger ones felt sick and ill at ease. As we neared the city, sacrificed human beings were lying in the path and bush—even in the King's compound the sight and stench of them was awful. Dead and mutilated bodies seemed to be everywhere—by God! may I never see such sights again! Just before we came upon these horrors an old man appeared from behind a big tree which had fallen across the bush path we were following. He was using bow and arrows, and believed (as we were told afterwards) that he was invulnerable. He was, however, shot. In the King's compound, on a raised platform or altar, running the whole breadth of each, beautiful idols were found. All of them were caked over with human blood, and by

giving them a slight tap, crusts of blood would, as it were, fly off. Lying about were big bronze heads, dozens in a row, with holes at the top, in which immense carved ivory tusks were fixed. One can form no idea of the impression it made on us. The whole place reeked of blood. Fresh blood was dripping off the figures and altars (months afterwards, when we broke up these long altars, we found that they contained human bones). Most of the men are in good health, but these awful sights rather shattered their nerves. We sent a despatch with ten men to our camp at the Cross Roads; whether it will reach or not we do not know, for we are cut off from everywhere at present. We are 300 white men, and will pull through somehow, you bet. We put out strong sentries, and slept the night amongst this filth in the open. I must mention that both black troops (who led all the way, by the by) and all the white men behaved splendidly. All of you at home can be proud of them. Fancy the state of our nerves, for eight hours walking through dense bush, where one cannot see more than ten feet away what is happening on the flanks, and to be potted at again and again by hidden natives, and to see men hit and fall close to one. Of course our great enemy was the want of water, and this was a great trial to the men, in the hot and blazing sun. This morning half our column, with 300 carriers, scouted about for water, which we rather expected to find three miles off. Luckily we found it. There are many bullocks and goats about the place, so for the next few days we shall have plenty of rations. It is quite possible, while getting our water, we may be attacked, as the path which leads down to it enters a very narrow gorge. But, being well armed, I think we shall be all right. I must not forget to mention that when leaving Awako yesterday morning the natives attacked the rear part of our column, the casualties being (for the eight hours till we took the city) four white men killed, one being Surgeon Fyfe, R.N., and sixteen white men wounded, Captain Byrne being one of them, three N.C.P. black men and three carriers killed, one Court Messenger and one guide wounded. This was rather a heavy loss for such a small force. We have been getting the place into ship-shape to-day, February 19th, and trying our best to make it defensible. We are also collecting food and water, and sending down an escort to the Cross-Road Camp for all we may require. I hope our men will get through. We are all right for ammunition, and can hold the place, if we get enough water, till the second division comes up. A party have gone out this afternoon to see and find the King's place; they went down the main thoroughfare, and have just returned. The whole road is strewn with dead, crucified and beheaded bodies in all states of decomposition, most of them blown out to double their size by the strong rays of the sun. Ajuma's house (a big chief), near here, was burnt, the natives only firing a few shots at us. The Ju Ju houses were also destroyed. We buried our dead to-day. Captain Byrne is better, but there seems very little hope for him. Three hundred yards past the King's compound the broad road which passes through Benin City is covered with bodies, skulls, bones, etc., most of the bodies being headless. The King's house is rather a marvel—the doors are lined with embossed brass, representing figures, etc., etc., while the roof is formed of sheets of muntz metal, and the rafters to support the same artistically carved.

February 20th.—In front of the King's compound is an immense wall, fully twenty feet high, two to four feet thick, formed of sun-dried red clay. This wall must be a few hundred yards long, and at each end are two big Ju Ju trees. In front stakes have been driven into the ground, and cross-pieces of wood lashed to them. On this framework live human beings are tied, to die of thirst or heat, and ultimately to be dried up by the sun and eaten by the carrion birds, till the bones get articulated and fall to the ground. There were two bodies on the first tree and one on the other. At the base of them the whole ground was strewn with human bones and decomposing bodies, with their heads off. Two looked like white men, but it was impossible for me to decide, as they had been there for some time; the flesh was off their hands and feet, and the heads had been cut off and removed. The bush, too, was filled with dead bodies, the hands being tied to the ankles, so as to keep them in a sitting posture. It was a gruesome sight to see these headless bodies sitting about, the smell being awful. All along the road, too, more decapitated bodies were found, blown out by the heat of the sun; the sight was sickening. To-day was occupied in blowing down these Ju Ju trees. Passing through the central door of the big wall we came upon a large tree; at its foot was a deep pit, which we noticed contained dead bodies. The natives, after sacrificing their victims, threw their bodies down there. On the first afternoon of our arrival our black troops heard faint cries coming from some of these pits, and letting themselves down came upon some live captives lying amongst the dead ones, in a very emaciated condition. They had been down there many days without food and water, intermingled with dead and rotting bodies. Some of these poor fellows had been carriers with Phillip's party, in the ill-fated expedition some weeks before. I found from them that all the white men in that expedition had been killed on the Gwatto road, and none had been brought into Benin City to be sacrificed, as the British public were once led to believe. One of the saddest sights, as we entered the big palaver house, was to notice the effects of the massacred white men. Amongst them we noticed Phillip's helmet in its case, a doctor's bag complete (which belonged to poor Elliot), while, scattered here and there, were their clothes, hats, boots, cameras, and other things so useful to men on the march. Of course we found no arms or ammunition, the natives having most probably used them against us.

February 21st.—A great disaster took place to-day, which really will prove a blessing. About 3 p.m. a good breeze sprang up, and while this was blowing, two carriers carelessly set fire to a hut. Unfortunately the wind was blowing towards the part of the town where we were quartered, and although the fire was about a mile away, Allman and myself advised everybody to remove their effects from the native huts, but, not thinking the fire serious, the officers only removed the ammunition to a safe place. The wind blew stronger, and the fire increased frightfully, the flames passing from house to house, and even setting light to the trees. As soon as we noticed it, we removed our medical stores; the men tried to move their stores, but were too late, and most of them had everything burnt. Even the things which had been placed in the middle of the big compounds caught fire, the heat being very great. In less than an hour the conflagration had burnt



itself out, and the whole place was strewn with ashes. The next day we found what a blessing had come to us, for fire, smoke, and charcoal seemed to have removed all the smell, and the city became sweet and pure again.

February 22nd.—At 8 a.m. the Admiral and staff left Benin City, with all their troops and wounded. They go down to Ologbo in easy stages, so as to give the latter every chance. Our black troops and officers lined the road through which the Admiral passed, and gave him three hearty cheers as he left with his men. To-morrow the N.C.P. Forces start their heavy work again. The King has to be followed and caught, the country opened, and the natives so influenced as to gain their submission. I cannot help closing this article with a word of praise for my black Accra boy, Charles Nartey. He is about eighteen years old. Throughout the expedition he behaved splendidly under fire. Although he was simply my own boy, Consul-General Sir Ralph Moor ordered me to put his name down for a medal and clasp, for behaving so well, and bringing in two wounded men under a heavy fire.

#### THE PROPOSED CLOSING OF THE BEN NEVIS OBSERVATORY.

THE half-yearly general meeting of the Scottish Meteorological Society was held in No. 4, Queen Street, Edinburgh, on July 21—Lord M'Laren, president, in the chair.

Sir Arthur Mitchell, the hon. secretary, read the report (a summary of which has already been published), which stated that the directors regretted to announce that the high and low level observatories at Ben Nevis would cease to exist in October of this year, owing to the want of funds.

Sir John Murray, in referring to the proposed closing of the Ben Nevis Observatory, said that the Scottish Meteorological Society undertook to raise the funds for this Observatory, and it was not until after the funds for raising the Observatory were got that the directors were really appointed by the different societies. Of course the directors undertook no responsibility with respect to getting the money. The people who were responsible for the closing of the Observatory were the Meteorological Society. They undertook to provide the funds, and on that condition the directors agreed to accept office. Now he did not think that the Scottish Meteorological Society could blame itself. He remembered quite well when it was first resolved that this money should be raised. The late Mr. Milne Home and the late President of the Royal Society, Mr. Stephenson, were as despondent as any member of the Society could be to-day about thinking that £5,000 or £6,000 could be raised for the building of the Ben Nevis Observatory. However, he remembered stating that if they would give their authority and names he felt sure that £6,000 could be raised in Scotland, and it was raised—and he believed that if he had time and was not engaged in other occupations at the present time that he would be able, within six months, to raise the £1,500 necessary to carry on the observatories for three years more.

The *Edinburgh Evening Dispatch* says : The news that the Ben Nevis Observatories—the high and low levels—are in danger of abandonment for lack of money to maintain them will come upon the public with surprise and regret. The Ben Nevis Observatory is the only one in the British Isles placed at a high altitude, and the results obtained, even within the limited period of its existence, have been of great scientific interest and value. It seems incredible, therefore, that this institution should be allowed to fail on the grounds referred to. Such a collapse would make Great Britain and its Government the laughing stock of scientific men all over the world. The science of meteorology can hardly be said to have advanced beyond the rudimentary stage, yet it is a science of peculiar importance to Great Britain, situated as she is on the verge of the Atlantic and liable to sudden and serious changes of temperature, with vast interests on sea and land, all more or less liable to loss or injury from atmospheric changes. At a time, too, when other and poorer nations are developing their high level observatories, the abandonment of those on Ben Nevis would be little less than a national disgrace and humiliation.

## A LADY'S NOTES ON RESIDENCE IN QUEENSLAND.

Shelley's Creek, Kholo, near Ipswich, Queensland,

November 10th, 1896.

MY DEAR A—,

I wish you a very happy Christmas and a bright and prosperous New Year. I should be delighted if you could all spend Boxing Day with us. S— would be much interested in the beautiful birds, butterflies, and other insects, and the younger ones would enjoy gathering shells and paddling in the river.

We had a very pleasant voyage; F— was a poor sailor, and enjoyed the excursions ashore more than the sea trip. We were tired of knocking about, and very glad to reach our bush home. You would be much surprised at some of the colonial towns. Adelaide and Melbourne are more like English towns than Sydney. Melbourne is splendidly laid out; some people consider the streets too wide, but traffic is more safe and pleasant in a fair space. A friend took us through one of the best drapery and general furnishing establishments; it equalled any I have ever seen at home. The cathedral is fine, and many of the public buildings put those in our large towns in the shade. Ipswich is a real colonial town—glaring white roads; the majority of buildings are of wood, with corrugated iron roofs; the first-class shops and banks and town offices are of stone. The suburbs are exceedingly pretty; stone, brick, and wooden houses, with verandas covered with roses and climbing plants, and beautiful gardens; the majority of churches are surrounded with trees and shrubs, and are very light and attractive inside.

This farm is one of the prettiest and best-watered in the Kholo district. A written description of the scenery cannot convey any idea of it to those who have not seen pictures of the bush; it is beautiful, but totally different to anything in England—different trees, and even the grasses are unlike those in our fields at home. Ridges, creeks, and gullies abound; wild flowers of brilliant colours and maidenhair fern grow in profusion; so also do ants, grasshoppers, and various insects. I do not notice these things out of doors, but when folks stand talking on the veranda, as F— and our visitor (an old Briton Ferry boy) are now doing, and leave the door open for little plagues to come to the lamp, and keep pitching on my paper, I object. There are a few mosquitoes about, but they do not trouble F— or myself; they may do so later on.

A fortnight ago the thermometer went up to 100 deg. in the shade—that was unusually high for the season—but rain came on, and the temperature went down rapidly, and it has continued cool and fresh in the mornings and evenings; it is just a little warm at noon. The air is very clear, one can see

miles off; moonlight nights are grand, and I fancy the stars are larger and brighter than at home.

Bush life is very free and unconventional; people almost live out of doors, and do not seem ever to hurry or flurry as they do in town; large families are the rule; children are remarkably healthy, and seldom need a doctor. One of the neighbours told me that only one of her ten children had ever had a day's sickness, except during teething, and then not much; the eldest daughter is 26, and is a fine, jolly-looking girl; indeed, Mrs. S—— herself is young and fresh-looking—one can scarcely believe her to be the mother of such a troop of children.

November 11th.

Now I must tell you a few of the drawbacks; the road to town is fearful—across a gully, up and down ridges. Crossing the river is not bad when the bridge is out of water, although the slope down is steep. It is a Government road, and considered fairly good by the colonials; but we women dread it for driving. M—— and F—— prefer riding; as yet I cannot go far on horseback. This house is too near the ground, and reptiles are apt to crawl in. Last summer a snake was killed on the sitting-room table, and one on the wall-plate of the cookhouse; lizards and large spiders also come in. J—— thinks we are not likely to get snakes again, because he has done a lot of clearing and burning round the house and in the nearer paddocks, has taken all the creepers off the veranda and moved a rockery, thus leaving little cover for any intruders near the house.

He intended building a larger house on higher ground, and having it several feet off the ground, and waited for our opinion of a site. F——, however, would like to get a place within easier reach of town and keep this for rearing and running stock, so we are waiting awhile to see if the climate and kind of life suit F——, and whether we are likely to remain. We shall be sorry to move from this spot, because the garden and fruit trees are in nice order, and it will take many years to get trees, etc., up to this standard on a new place. There are 70 orange trees, besides peach, quince, mulberry, plum, fig, cherry, lemon, and some young apple and pear trees. The orange trees are evergreen, and look lovely when in blossom, as they were when we came; the scent from them is sometimes overpowering. I prefer the scent of the lemon blossom. The fruit on both is forming nicely, but not as abundantly as last season; they sold hundreds of dozens, besides using liberally at home; we have still a few stored for our own use. Pomegranate blossoms are beautiful, but none of us care for the fruit.

The house must be moved, because it is only just beyond the flood-mark of an ordinary wet season; in 1893 the flood came into the house to a depth of four feet! Some of our neighbours have to turn out of their houses nearly every wet season, and do not seem to mind it; but our folks would not be happy or comfortable under such circumstances. Most people were surprised at Mr. K—— building the house so low, when there are several convenient sites on much higher ground. We met Mr. and Mrs. K—— at Sydney, and were very favourably impressed. I wish we had them for



neighbours. They have a fruit farm near Sydney; they have no children, and went there to be near a favourite niece; both of them felt leaving here; they had been here 25 years.

It is very warm to-day, about 90 deg. in the shade; the usual afternoon breeze is just rising, so we shall soon be comfortable. M—— says they have not had afternoon tea indoors half a dozen times since they have been here; the veranda is the favourite place. Last Monday we had friends out from town for the day; we had the tent fly rigged up from the veranda to the fence, and a nice dining-room it made; the whole party (18) dined comfortably together; we had three meals out there. We get visitors from town often; sometimes they come in a buggy, but oftener on horseback. Mondays and Saturdays are the favoured days. To-morrow evening one of the boys is coming out to fish, and will sleep here. Little C—— is the picture of health; he seldom wears socks or slippers, except when going into town. He loves the water, and splashes and dashes about in the river so vigorously that we have a job to hold him, and he screams aloud when we take him out. One afternoon last week a *heavy shower* came on suddenly while C—— was playing on the grass. He was not willing to come in, and got in quite a temper because we would not let him catch the water as it ran off the roof of the veranda. I must conclude, as I have several more letters to write and some sewing to do before going in to Ipswich on Friday. During the hot weather we start at five o'clock, so as to deliver the butter at the stores before it gets soft. Kind regards to Mr. R——, to your mother, and yourself, from your sincere friend,

P. J. W——.

---

## NEW BOOK.

---

“ESSAYS AT EVENTIDE.” By THOMAS NEWBIGGING, author of the “History of the Forest of Rossendale,” etc. 230pp. (no index). Gay and Bird, London, 1898.

THIS collection of papers read before several Manchester societies was written by a busy Manchester engineer in the intervals of business. For the most part they are on literary subjects, but the longest and most important paper here printed is the reprint of the address given to the Manchester Geographical Society, and printed in a former journal, entitled, “Through the Heart of Europe.” This is a charming paper, and evidences careful observation in a country new to the writer. Mr. Newbigging’s “History of Rossendale” is well known, and his graceful writing, which embellishes every theme he touches, is highly appreciated, and these “Essays at Eventide” will have a very cordial reception. We trust we shall not be obscure, but Mr. Newbigging quotes Cowper’s lines—

Come, evening, once again, season of peace,  
Return, sweet evening, and continue long.

This, we presume, is not the “eventide.” We hope we may have many more essays from him before the night falls.

## A NEW RUSSIAN FOREST DISTRICT OPENED.

THE hitherto unavailable forests of the extreme north-eastern portion of Russia in Europe are about to be made accessible, and within a very short time the fine redwood trees of those virgin forests bordering on the Arctic circle will be put upon the English and other European markets in the shape of sawn deals, etc. A concession has been granted to a strong Swedish company with cutting rights to fell about two million trees in the basin of the Petchora River, and arrangements are being made for the transportation of the logs down to the mouth of the river and along the coast westward to the Port of Oserka, on the Kola Peninsula, off the Murman coast, which lies on this side of the White Sea, and within a few hours' steam of the Norwegian frontier.

The exploitation of these forests, which are situated in the eastern portion of the district of Archangel, has long been under consideration. Some years ago it was proposed that, in consequence of the shallowness of the water at the mouth of the Petchora River, and the short time each year it was free from ice, the logs should be towed up the river and conveyed by means of a canal into the Dwina, and floated to the White Sea. The Swedish company (The Petchora Timber Co.), however, propose to work upon entirely different lines. They intend to float the logs down the Petchora River in large rafts, and convey them along the coast in steam lighters, carrying about 5,000 logs, to the Port of Oserka. The mouth of the River Petchora is free from ice and open to navigation for only three months in the year, and it is thought feasible to be able to convey sufficient logs during that period to the sawmills at Oserka to enable continuous cutting practically the whole of the year. Oserka being an ice-free port the export can be carried on during nine or ten months of the year. The redwood trees growing on the western slopes of the Ural Mountains of the Petchora basin are of excellent quality and of large dimensions.

From the source of the Petchora River in the western slopes of the Ural Mountains to its outlet in the Arctic Sea opposite Nova Zembla it is navigable for nearly 700 miles of its course, expanding into an estuary 30 miles wide and full of islands, but difficult of navigation.

The new sawmills at Oserka will have a sawing capacity of about 300,000 logs per annum, and will be lighted by electricity; and, as the climate on the Murman coast seldom exceeds 10 degrees of cold in the winter, and the heat in summer not often rises above 20 degrees Celsius, work can be carried on both by day and night—work which would not be possible in a more severe climate.

Vessels can load alongside the quays at Oserka, and it is also in international telegraphic communication with foreign countries.

The many advantages which the situation of Oserka presents is considered to counterbalance the expense of the transport of the logs from the mouth of the Petchora, although the distance is about 500 miles. The directors of the company are all gentlemen of reputation and considerable experience in Swedish forestry and export wood trade.

HENRY ALBROW,

Gilda Brook, Eccles.

July 25th, 1898.

H

## CORRESPONDENCE.

---

### UNIVERSITE NOUVELLE DE BRUXELLES.

#### INSTITUT GÉOGRAPHIQUE.

L'Institut Géographique, fondé, le 18 mars, 1898, par notre Université Nouvelle, n'a point à suivre de programme dicté par un Conseil supérieur de l'Instruction publique; le plan des études a été fixé suivant l'ordre qui nous a paru le plus logique, conformément à l'idéal de tout géographe qui serait à la fois un savant, un érudit et un bon ouvrier, donnant de ses mains une réalisation pratique à toutes ses conceptions. Cependant, ce plan d'études est tel qu'il serait tout naturellement adopté, peut-être même avec de notables réductions, au cas où le titre de "diplômé en géographie" serait officiellement créé. Pour ne pas nous tromper en cette matière, nous avons sollicité les conseils des savants les plus autorisés du monde universitaire.

Voici quel est le plan d'enseignement institué par l'Université Nouvelle:

#### COURS PRÉPARATOIRES DONNÉS À LA FACULTÉ DES SCIENCES.

Histoire naturelle.—Notions de Géologie, Botanique, Zoologie.

Chimie et Physique rudimentaires.

Mathématiques élémentaires.

Géographie sommaire.

Histoire.—Chronologie.

Langues :

Langue anglaise.

Langue allemande.

Langue russe.

Langues néo latines (italien, espagnol, portugais).

Dessin.

#### PREMIÈRE ANNÉE À L'INSTITUT.

Conférence d'entrée: Place de la Géographie dans la Science.

Cosmographie . . . . . 1 h. par semaine.

Géographie mathématique.—Théorie des

Projections . . . . . 3 „

Géographie physique. — Morphologie,

océanographie, eaux courantes . . . 2 „

Météorologie . . . . . 1 „

Géologie . . . . . 1 „

Biologie. — Anthropologie . . . . . 1 „

Langues. . . . . 2 „

Dessin; construction de cartes . . . 2 „

Photographie de cartes . . . . . 1 „

Reliefs . . . . . 1 „

15 h. par semaine.

Excursions durant les vacances, à terre et sur les côtes.



## DEUXIÈME ANNÉE À L'INSTITUT.

Cosmographie et Géographie mathématique . . . . .	3 h. par semaine.
Géographie physique, Météorologie, Hydrologie . . . . .	2 „
Géologie.—Paléontologie . . . . .	2 „
Géographie botanique . . . . .	1 „
Anthropologie . . . . .	1 „
Langues . . . . .	2 „
Dessin; construction de cartes; reliefs . . . . .	4 „

---

 15 h. par semaine.

Excursions durant les vacances, à terre et sur les côtes.

## TROISIÈME ANNÉE À L'INSTITUT.

Géodésie . . . . .	1 h. par semaine.
Structure géologique du Globe . . . . .	1 „
Géographie zoologique . . . . .	1 „
Anthropologie . . . . .	1 „
Géographie médicale, nosographie. . . . .	1 „
Ethnographie.—Colonisation . . . . .	1 „
Histoire de la Géographie (Paléographie, Portulans) . . . . .	3 „
Géographie comparée . . . . .	2 „
Toponymie . . . . .	1 „
Géographie commerciale, statistique . . . . .	2 „
Construction de cartes, reliefs, appareils, instruments . . . . .	2 „

---

 16 h. par semaine.
Excursions et exercices pendant le temps laissé libre par les cours.—  
Science et pratique de l'Exploration.—Voyages.

Les études régulières comprendront la préparation de mémoires originaux que publiera l'Institut. En outre, les cartes et les reliefs, construits par les élèves pendant les heures d'étude universitaire, seront exécutés avec assez de soin pour que l'Université Nouvelle en prenne la responsabilité et les édite aux frais et au bénéfice de notre œuvre d'enseignement.

La part de travail consacrée par les étudiants à ces publications, en dehors des heures d'étude convenues—trois heures par jour—sera considérée comme leur apport personnel dans les publications sociales.

Les élèves inscrits à l'Institut Géographique comme étudiants réguliers paieront le minerval de l'Université Nouvelle. En outre, ils auront à supporter les frais de voyages et d'excursions.

La Bibliothèque et la Collection de cartes seront à la disposition de tous les élèves de l'Institut et de l'Université Nouvelle; en échange, nous leur demanderons les documents géographiques qu'ils possèdent et dont ils ne font pas usage.

L'Institut envoie l'expression de sa cordiale sympathie à toutes les Sociétés qui s'occupent des sciences de la Terre et de l'Homme, et leur exprime le

désir d'entrer avec elles en relations suivies. Elle considérera comme un devoir de leur envoyer un exemplaire de chacune de ses publications.

Nous nous sommes assurés déjà le concours des professeurs et constructeurs dont les noms suivent:—

Blancoff: Géographie mathématique et théorie des projections; dessin.

Cherbanoff: Géographie botanique et zoologique.

Choppinet: Photographie.

Félix: Géographie médicale.

Guyou: Construction d'appareils.

Hostelet: Cosmographie.

Houzeau de Lehaie: Géographie physique, géologie.

Huysmans: Langues, toponymie.

Perron: Construction de reliefs.

Reclus (Elisée): Géographie comparée.

Vincent: Météorologie.

Wayngourten: Langues.

Prière de s'adresser, pour tous renseignements complémentaires, au Secrétaire général de l'Université Nouvelle, rue des Minimes, 21, à Bruxelles.

---

“WRAGGE'S AUSTRALASIAN WEATHER GUIDE AND  
ALMANAC FOR 1898.”

Sir,—The publishers of this work, Messrs. Sapsford & Co., Brisbane, confided to me the other week that they thought the time had come when a thoroughly scientific almanac, dealing principally with the new science of Meteorology, in its relation to the Australasian colonies, would be acceptable to the general public, and especially so if compiled in a popular and readable manner. I entirely concurred with their view, whereupon they asked me if I could find time to edit the publication. Willingly I agreed, provided that the Queensland Government would kindly grant the necessary permission. Ever ready to assist a scientific undertaking, my Honourable Minister, the Hon. J. R. Dickson, generously gave the required approval, and my thanks, coupled with those of the publishers, are hereby sincerely tendered to him; . . . . . and, in a word, it will be our constant endeavour, year by year, to so improve this publication as to render it a standard work of reference in popular and practical science to the dwellers in every portion of this Great Southern Land.

CLEMENT L. WRAGGE.

E. Sowerbutts, Esq.

---

MR. H. T. CROOK, C.E.

9, Albert Square, Manchester,

9th May, 1898.

Dear Sir,—I thank the Council, and yourself personally, for the kind sympathy expressed towards me in the loss which I have sustained.

I am, yours very truly,

HENRY T. CROOK.

Eli Sowerbutts, Esq.,

Secretary, Manchester Geographical Society

MR. GEORGE THOMAS.

72a, Deansgate, Manchester.

24th May, 1898.

Dear Sir,—Herewith for your library:—Two volumes: “Travels through Central Africa to Timbuctoo,” and “Across the Desert to Morocco” (1824-1828), by René Caillié. Published in London, 1830. Most interesting!

Yours sincerely,

GEORGE THOMAS.

Eli Sowerbutts, Esq.,

Secretary, Manchester Geographical Society.

---

REV. W. C. PORTER, M.A.

Banbury, June 6th, 1898.

Dear Mr. Sowerbutts,—I thank you very much for your kind letter. I propose being in and near Manchester on the second and third weeks in July, and it will be a great pleasure to see you again. Pardon my delay in answering. I will write again when I know the days. With kind regards to your family,—I am, yours very truly,

WILLIAM C. PORTER.

[Mr. Porter has been suddenly recalled to East Africa.]

---

MR. HERBERT GLADSTONE, M.P.

Hawarden Castle, Chester,

June 3rd, 1898.

Dear Sir,—On behalf of my mother and the family, I beg to thank the Manchester Geographical Society for their kind message of sympathy.

I remain, very faithfully yours,

HERBERT J. GLADSTONE.

E. Sowerbutts, Esq.

---

MRS. BRIGHT.

31, St. James's Place, S.W.,

June 25th, 1898.

Dear Mr. Sowerbutts,—I thank you for the group photograph, which is an interesting reminder of our old friends. You must have had a pleasant gathering. My husband joins me in good wishes for your Society.

Very truly yours,

URSULA M. BRIGHT.

---

MISS ELIZABETH DAY.

The Sheiling, Silverdale, near Carnforth,

April 26th, 1898.

Dear Mr. Steinthal,—Will you kindly convey to the Council of the Manchester Geographical Society my best thanks for the kind message which you



have conveyed to me? It is a matter of regret to me that now, when I might have had time to attend regularly the lectures provided by the Society, I shall be living quite out of reach of them. I came here last Saturday, and already feel that the change of air is doing me good. If all goes well, I hope to return to the school in about three weeks. I hope that you will enjoy your visit to Harrogate, and that it will do both you and Mrs. Steinthal good. With kindest regards,—I remain, very truly yours,

ELIZABETH DAY.

---

MR. M. COBE.

195, Burton Road, West Didsbury,  
Manchester, April 28th, 1898.

Dear Mr. Sowerbutts,—Enclosed is the map I mentioned. I am glad it is some use to some one at last, as I have had it lying about over twenty years (a fine old map of Cuba).—Yours truly,

M. COBE.

E. Sowerbutts, Esq.

---

MR. EDWARD SUTTON.

Office of the "Sugar Cane," Manchester,  
30th May, 1898.

To E. Sowerbutts, Esq.,

Dear Sir,—I think the accompanying documents may be of some interest, and therefore send them on at once. I have quite a lot of Foreign Office Reports, which I hope to get through in the course of a few days, and will then hand them over to you. Among them will no doubt be some that will interest you, but many will probably be best bestowed in the waste-paper basket, of which you will be the proper judge. They are of no further use to me.—Yours very sincerely,

EDWARD SUTTON.

[Mr. Sutton presented the Society with a large number of valuable official documents.]

---

CAPTAIN BERTRAND.

Geneva, Chemin Bertrand,  
30th May, 1898.

To the Manchester Geographical Society,

Sir,—I have the pleasure of presenting to the Manchester Geographical Society a copy of the book I have just published, "*Au Pays des ba-Rotsi*." (Haut-Zambeze).—I am, sir, yours very sincerely,

(Captain) ALFRED BERTRAND.

## PROCEEDINGS OF THE SOCIETY.

APRIL 1ST TO JUNE 30TH, 1898.

---

The 466th Meeting of the Society was held in the Library, on Wednesday, April 6th, 1898, at 7-30 p.m. In the chair, Mr. J. D. WILDE, M.A.

The Minutes of Meetings held on March 25th and 28th (and 28th dinner) were read and approved.

Letters were read from the following:—Rev. F. B. Shawe, Mr. E. J. Russell, Mr. G. H. Warren, Mr. S. H. Brooks, Mr. A. J. Herbertson, Mrs. Steinthal, Mrs. C. T. I. Garner, Rev T. F. Nicolas, Sir J. Leigh, Rev. S. A. Steinthal, Mr. J. H. Smith, Mr. William Smith, Mr Dentith, Mr. C. W. Grindley, Mr. J. Davies, Mr. R. Swindells, Mr. C. H. Bellamy, Mr. G. S. Taylor, Mr. J. Marsden, Mr. C. Battersby, Mr H. D. Henriques, Mr. R. Lord, Mr. H. H. Bentley, Mr. F. Womersley, Mr. J. Watson, Prof. Guido Cora (on the General Italian Exhibition in Turin in 1898, giving the divisions of the exhibition and other information), Dr. Ward, Mr. J. Warren, Mr. H. M. Birdwood, Mr. T. L. Bullock, Lady Leech, Dr. W. G. Black, Lady Temple, and Miss H. Warren.

Mrs. Anson, of Birch Rectory,

The Deanery, Winchester.

Mrs. Anson is grieved that the resolution of the Council of the Manchester Geographical Society, expressing so warmly their deep sympathy with her in her sorrow, should have remained so long unanswered. She thanks them most sincerely for their sympathy and for the expression of their appreciation of him whose loss she must ever so deeply mourn.

March 26th, 1898.

Announcement was made of the election of the following new members:—  
LIFE: Rev. F. C. Smith, B.A.

HONORARY: Dr. A. W. Ward.

ORDINARY: Mr. William Stones, Mr. John Benton, Mr. N. Notman, Mr. J. S. Reid, and Mr. P. Maclean.

### FISHERY EXHIBITION AT BERGEN IN 1898.

We have much pleasure in calling attention to the International Fishery Exhibition, combined with a Norwegian Art, Industrial, and Agricultural Exhibition, which will be held at Bergen in 1898.

“This exhibition, opened 16th of May and closing 30th of September, will certainly prove a great attraction.

"In the first place must be mentioned among the numerous exhibits the excellent products of Norwegian boat and ship building, which has been famous since the viking time. Also will be seen fine specimens of the light and cheap Ranen boat, of the solid and fast-sailing pilot boat, of the almost antique Nordland sloop, of the whaling boat, the cargo and passenger steamers, etc.

"The Industrial Department is sure to find many admirers, especially among the ladies. Those who have travelled in Norway know what Norwegians can produce in this branch. For instance, the exquisite Hardanger embroidery, which took even the German Empress's fancy, the old art of hand-woven tapestry again fashionable and now brought to an eminent degree of perfection.

"The Fishery Exhibition will give a good idea of the principal trade of Norway. It will be seen how the whale and seal are captured and utilised, how the multitudinous herring is caught, prepared, and cured; also what a long and variable process the codfish has to undergo, from the day it leaves its home—the Lofoten—until it becomes dried as stock-fish, or salted and dried as klip-fish, known all over the world.

"Another interesting feature in the Fishery Exhibition will be arranged by the Bergen Experimental Fishery School, which is supported by the Government and has attracted the notice of all fish-trading nations, both in the old and the new world. In the centre of the Exhibition the biological station is situated, with a charming aquarium and a seal and polar-bear pond.

"On an average Norway exports yearly one million barrels of herring, 80 millions of stock and klip-fish, and the whale fishery is estimated at about 2,000 whales.

"The Fishery Exhibition is international, several European countries, viz., Sweden, Denmark, Russia, France, and perhaps Germany will contribute, besides the United States, Japan, etc.

"Most likely a long period will elapse before foreigners will have another opportunity of seeing so complete a picture of Norwegian life and customs, or a better specimen of Norwegian industry and national curiosities.

"The Exhibition buildings, with their cupolas and towers, are all situated in the beautiful Nygaardspark.

"At the end of June and beginning of July a grand national musical festival took place. The programme consisted of works by such favourite composers as Greig, Svendsen, Selmer, Sinding, and others, who conducted in person, under the leadership of Edvard Greig."

Mr. JAMES S. REID, Governor of the Nicholls Hospital, who made a bicycle tour through Scotland in 1897, gave an account of this holiday, and showed over 100 fine slides especially selected or prepared.

Mr. Reid had 500 miles of cycling through the finest scenery in Scotland, and the following places were mentioned and illustrated:—Stirling, Callander, Trosachs, Loch Lomond, Rannoch Moor, Glencoe, Fort William, Caledonian Canal, Ross-shire, Inverness, shores of Moray Firth, Spey Side, Grampians *via* Killiecrankie, and the Loch Tay route back to Callander. The address was one of great interest and value, and was very much enjoyed by the members present.

Mr. ROBERT STEWART moved a very hearty vote of thanks to Mr. Reid for his address, the greater part of the route being well known to him; the



Very Rev. L. C. CASARTELLI seconded the motion in a few appropriate words, and it was supported by Mr. J. SNADDON, and carried with acclamation. Mr. REID responded.

---

The 467th Meeting of the Society was held in the Library, on Thursday, April 21st, 1898, at 5-30 p.m.

Lady Leech, Mrs. Steinthal, and other lady members received a large number of ladies connected with the Society at a *conversazione* in the rooms of the Society.

A large number of the treasures of the Society were exhibited, and aroused much interest. Light refreshments were served, and a most interesting afternoon was enjoyed.

---

The 468th Meeting of the Society was held in the Coal Exchange, Market Place, on Thursday, April 21st, 1898, at 7-30 p.m. In the chair, the Rev. S. A. STEINTHAL.

The Minutes of Meeting held on April 6th were read and approved.

Correspondence was read from Rev. J. Hutcheon, Mr. J. Lord, Mr. John Thompson, Captain Greenwood, Mr. C. H. Bellamy, Mr. John Coles, Dr. Sinclair, Rev. S. A. Steinthal, Dr. Black, The British Association, Colonel Wells, Mr. F. Womersley; Royal Geographical Society of Australia, Adelaide (with a copy of "Horn's Expedition," with map); Councillor S. H. Brooks, Mrs. Nuttall, Mr. J. Snaddon, Mr. G. H. Warren, Mr. John Grant, Société de Géographie de Rochefort, Mr. S. Oppenheim, Mrs. Zimmern, Mr. A. H. Sykes; Geological Survey, Sydney, New South Wales; and the following two communications from Lisbon, having reference to the Vasco da Gama celebration in 1898:—

#### VASCO DA GAMA PUBLICATIONS IN 1898.

Monsieur,

Les exemplaires des publications commémoratives du 4<sup>e</sup> centenaire de la découverte de la route maritime des Indes qui vous ont été adressées, sont un hommage que le Comité Central Exécutif a un grand plaisir à vous présenter.

D'autres exemplaires de ces ouvrages pourront être obtenus de tout libraire portugais, ou directement du comité.

Les prix de vente sont ceux établis dans la note ci-jointe.

Nous vous serions très-reconnaissants de vouloir bien faire insérer ces publications dans vos catalogues.

Il vous sera offert également un exemplaire de tout nouvel ouvrage.

Le comité fait les remises suivantes sur les commandes qui lui sont adressées directement:

20 per cent pour une demande non inférieure à 5 exemplaires; 25 per cent pour 20 exemplaires, ou plus.

Les envois sont faits contre réception du montant.—Lisbonne, le 30 mars, 1898.

Comité Central Exécutif pour la célébration du Centenaire (Hôtel de la Société de Géographie de Lisbonne).

LE SECRETAIRE.

## CENTENAIRE DES INDES.

Publications commémoratives de la Société de Géographie de Lisbonne pour le 4ème centenaire de la découverte de la route maritime des Indes par Vasco da Gama (1498-1898).

## 1ère SERIE.

"Hymno do Centenario," par M. Fernandes Costa. Paroles de l'hymne national par un des premiers poètes portugais de l'actualité. Prix, 1 fr. 50.

"Batalhas da India."—Como se perdeu Ormuz, par M. Luciano Cordeiro. Monographie historique et documents inédits sur la prise d'Hormouz aux portugais par les anglais et les perses coalisés, dans le 17ème siècle. Bataille navale du Cap Jasques. Evasion du grand capitaine portugais, Freire de Andrade, de bord d'un vaisseau anglais à Surrate, etc. M. Luciano Cordeiro est bien connu par ses travaux historiques et géographiques. Prix, 4 fr.

"Viagem da India," par M. Fernandes Costa. Petit poème sur l'expédition à la découverte de la route maritime des Indes. Prix, 1 fr. 50.

"Dai Nippon" (Le grand Japon), par M. Wenceslau de Moraes. Impressions littéraires et artistiques sur le Japon et la vie japonaise. Prix, 5 fr.

"Chronica dos reis de Bisnaga," par M. David Lopes. Chronique du 16ème siècle de l'Empire de Bisnaga (Indoustan), publiée pour la première fois par M. David Lopes. Ce précieux codice a servi au célèbre historien, Joao de Barros. Prix, 3 fr. 50.

"Abba Daniel," par MM. Esteves Pereira et L. Goldsmidt. Etude et traduction d'un très ancien recueil abyssin. Les auteurs sont bien connus de ceux qui se livrent à l'étude des documents orientaux. Prix, 2 fr. 50.

"Religios da Lusitania," par M. Leite de Vasconcellos. Indées et monuments religieux des peuples qui ont habité la Lusitanie (Portugal). Prix, 10 fr.

"No Oriente."—De Naples á China, par M. Adolpho Loureiro. Impressions de voyage dans les Indes et dans la Chine.—2 vol. Prix, 10 fr.

"Texos em Aljama Portuguesa," par M. David Lopes. Documents historiques portugais en caractères arabes (Histoire de la domination portugaise au Maroc, 16ème siècle). Prix, 3 fr. 50.

"Vasco da Gama e a Vidigueira," par M. A. C. Teixeira d' Aragao. Quelques notices et documents sur Vasco da Gama. Prix, 5 fr.

"Dos feitos de D. Christovam da Gama," par M. F. M. Esteves Pereira. Campagne portugaise dans l'Abyssinie au 16ème siècle. Exemplaire nouveau et inédit de la chronique de Castanhoso. Prix, 3 fr. 50.

Several members of the Society gave an enjoyable musical selection.

Mr. HAROLD J. BENTLEY described the scientific construction of the cinematograph, the graphophone, and the instrument for exhibiting the Rontgen X-rays. The description was made most interesting by Mr. Bentley, who explained the various instruments in detail, and who showed their construction and method of working. He then gave specimens of the work of the various instruments, to the great delight of the large number of members present.

The Rev. S. A. STEINTHAL moved a very hearty vote of thanks to the musicians, and particularly to Mr. Bentley for the exceedingly interesting and instructive addresses he had given during the evening, and for the very

fine exhibition he had given of the instruments. Mr. S. OPPENHEIM seconded the motion, and it was carried. Mr. BENTLEY responded, and said he had taken a speech of the Rev. S. A. Steinthal on the film, and it would be capable of being reproduced as Mr. Steinthal's speech in future years.

---

The 469th Meeting of the Society was held in the Library, on Monday, April 25th, 1898, at 7-30 p.m. In the Chair, Mr. J. D. WILDE (Hon. Sec.).

Lieut.-Col. HENRY LAKE WELLS, C.I.E. (formerly of Teheran), addressed the Society on "Caravan Routes and Road-making in Persia." (See page 176.) His position in the country gave him exceptional opportunities for procuring valuable information, and the address was of great interest to the Society. The address was illustrated with maps and lantern slides.

At the close of Colonel Wells' very valuable address several questions were asked, to which Colonel Wells replied.

The Very Rev. Dr. CASARTELLI moved a very hearty vote of thanks to Colonel Wells for his admirable address, and for the opportunity of seeing his fine photographic slides. Mr. C. H. SCOTT seconded the motion with very great pleasure, and it was carried. Colonel WELLS responded.

---

The 470th Meeting of the Society was held in the City Art Gallery, on Thursday, May 5th, 1898, at 3 p.m. In the chair, Mr. HARRY NUTTALL, Vice-Chairman of the Council.

Mention was made of the missing son of Sir Bosdin and Lady Leech in the disturbed hinterland of Sierra Leone. The meeting expressed its sympathy.

Mr. H. SOWLER then said he had just had a telegram announcing the safe arrival at Bonthe of Mr. Leech. The announcement was received with pleasure.

It was resolved, on the motion of Mr. S. OPPENHEIM, seconded by Mr. Alderman I. BOWES: "That Mr. T. R. Newby (who has consented to represent the Society at the Lisbon celebration on May 17th, 18th, 19th, and 20th) be requested to convey our congratulations to Señor Cordeiro and the Lisbon Geographical Society on the great national celebration at Lisbon of Vasco da Gama's successful voyage to India round the Cape of Good Hope."

Mr. W. OGILVIE, Geological Surveyor for the Government of Canada, addressed the Society on the resources of British Columbia, with special reference to the gold districts of Klondyke. Mr. Ogilvie commenced his lecture by describing the origin of the name Yukon, which was a combination of two or three Indian words meaning "the great river." The area of Yukon district was 338,000 square miles, of which 149,000 belonged to Great Britain, and this latter portion was much more important than all the rest, as it contained the bulk of the gold and timber, and was much more readily accessible from the south, which would be, after all, the really only ready means of access. The length of the River Yukon was 2,100 miles, and he described its various reaches, and also the routes to its watershed and Dawson City from British Columbia. Each of the British provinces in North America had a home rule government of its own, but the whole country had a general Government, and

many of the provinces reserved certain rights to themselves, Columbia reserving the timber and mineral rights. The gold was found in rivers, streams and gulches, and 200 miles of this kind of country were estimated to contain £20,000,000 worth of gold, or 100,000,000 dollars. Nearly 7,000 miles was gold-bearing, of which 3,000 miles was known to be so in a commercial sense, and a great deal of it was very valuable. How he arrived at the above estimate was explained by describing the results attained at certain claims in the neighbourhood of the Eldorado Creek, one of the principal creeks in the Klondyke district. There was also a considerable quantity of lignite coal. There was a metalliferous area through British Columbia and the North-West Territory to the international boundary line, and beyond. That covered about 300,000 square miles, of which only 10,000 square miles had been developed—not exhausted. In some parts near Dawson City labour was paid for at the rate of 6s. per hour, or from 15 to 17½ dollars per day. Two-thirds of the labour comprised the collecting of timber with which to thaw the ground to get down to the bedrock. Most of the streams were frozen solid for seven months in the year, and freight charges were very high, it being very expensive to get machinery there to deal with the quartz that had been found. Those charges were from 125 dollars upwards per ton. Silver lodes were also found in the district. The timber was limited, as it was only found at the bottom of the gulches, so that out of an area of 125,000 miles only 2,000 miles were covered with timber. The gold, for the most part, was washed down the streams from the rocks or mountains, but it was questionable whether there would be found much quartz which it would pay to work. The major portion of the lecture was a description of numerous views thrown upon canvas by means of a lime-light lantern. These views depicted the surface features of the country, and the great difficulty of travelling, the principal points of interest known to the seekers of fortune there, the homes of the people, and the manner in which they obtained the gold from the gulches, rivers, and streams. The address was illustrated with maps and some of Mr. Ogilvie's fine slides made from photographs he has taken during the period of his surveying work in the district. It was very full of information, and the statements made were striking.

Mr. Alderman I. Bowes moved that a hearty vote of thanks be tendered to Mr. Ogilvie for his address; the motion was seconded by Mr. W. ALDRED, and carried.

---

The 471st Meeting of the Society was held in the Mayor's Parlour, Town Hall, on Friday, May 13th, 1898, at 3 p.m. In the chair, Mr. HARRY NUTTALL, Vice-Chairman of the Council.

The CHAIRMAN expressed the regret of the Lord Mayor that owing to absence he was not able to preside.

The CHAIRMAN said that China, there was very little doubt, would be of increasing and absorbing interest to this country for many years to come. The advent of the Americans on the scene complicated, or he would rather say gave an added interest to the position. When one reflected that here in Central Asia was the place in which civilisation was supposed to have had its origin, when one followed the course of that civilisation across Europe, passing through England, across the Atlantic, over the American continent, and on to



the Pacific—when one reflected on this, it must strike him as a remarkable fact in history that those forces of civilisation should now have reached again to the very heels of that East in which they had their birth. If one were to allow the imagination full play he would speculate on the length of time it would take those forces to circumnavigate the globe a second time. There was little doubt, he thought, that the Americans would work with the English in developing the trade and resources of China. By that the whole world would be benefited.

Mr. T. L. BULLOCK, Her Majesty's Consul at Chefoo, China, addressed the Society on "The Geography of China." (See page 113.) The address was illustrated with a large map of China lent for this meeting by the Royal Geographical Society.

At the close of the address Dr. A. W. WARD proposed a vote of thanks to Mr. Bullock, and said the lecture was one which gave them a basis on which to study the relations of China to the trade and civilisation of the world. It was remarkable how much talk there was about China and her relations with foreign powers coming from persons who had not the geographical knowledge which would permit them to speak or think on the subject. The Rev. Dr. SWALLOW, for many years a Chinese missionary, seconded the vote of thanks, which was heartily passed. Mr. BULLOCK responded.

Mr. S. OPPENHEIM, Hon. Treasurer, moved that the thanks of the Society be given to the Chairman, to the Right Hon. the Lord Mayor for the use of his parlour, and to the Royal Geographical Society for the loan of the map.

---

The 472nd Meeting of the Society was held at the Queen's Hotel, on Friday, May 13th, 1898, at 7-30 p.m.

Mr. Consul Bullock was met at dinner by a party of members. During the evening Mr. Bullock gave considerable information about the North of China.

The Meeting took a conversational form, and the members were very much pleased at the opportunity of meeting Consul Bullock. The usual toasts were given, and the toast of Mr. Bullock's health was well received.

---

The 473rd Meeting of the Society was held in the Chemical Theatre, Owens College, on Thursday, May 19th, 1898, at 8 p.m. In the chair, Dr. A. W. WARD, late Principal of Owens.

The CHAIRMAN moved that a vote of sympathy should be forwarded to Mrs. Gladstone and her family on the occasion of the death of Mr. W. E. Gladstone. This was duly seconded, and silently carried.

Mr. WARD then said: "I occupy the chair to-night at the request of the Principal of this College, who takes the same interest in the prosperity of the Manchester Geographical Society that I have long taken myself, however few and insignificant are the proofs of this interest which I have been able to give. We are very sensible of the aid furnished in former days by the Society towards the provision of geographical study in this College, and we cherish a further sense of gratitude for possible future favours to come. And

we look forward, in any case, to the continuance of a co-operation which cannot but prove of advantage to a branch of research the importance of which will, we hope, become more and more evident to the community for whose sake the Society and the College are alike at work.

"I have another and a special reason for feeling personally gratified at being called upon to preside over this meeting. In introducing to you the distinguished gentleman who is to address the Society to-night, I have the pleasure of introducing to you an old and valued personal friend. A great many years ago Dr. Birdwood and I were undergraduates together at Cambridge, where, after he had taken a high mathematical degree, the college to which we both belonged elected him to a position of honour rather than of profit. He then went out to India, to the Bombay Presidency, where his name already had a familiar sound, and began a career in the Civil Service which has led him to its highest places; for, after holding one of the judgeships of the High Court, he was several years since appointed a Member of the Council of the Governor of Bombay. Dr. Birdwood's eminent services to the Queen and Empire in the posts to which I have referred are well known, and equally well known to those who have watched his public career is the evidence which it has furnished of unflinching integrity and high moral courage. It is pleasant to be able to add, especially on the occasion of his visit to our University College, that he has continued to show a special interest in academical matters, and that he has held with great distinction the important position of Vice-Chancellor of the University of Bombay. His own contributions to botanical research have made his name favourably known in the world of science.

"The problem which Dr. Birdwood proposes to discuss to-night is one of great significance from more points of view than one—from the point of view of medical science, and from that of administrative statesmanship. But from none is it so interesting and so important as from that of the relations between our Indian rule and the millions with a view to whose welfare that rule is sought to be conducted by its best, as they are its most experienced, representatives—statesmen following the principles which have directed Dr. Birdwood's long and distinguished public career."

Dr. H. M. BIRDWOOD, C.S.I., LL.D., M.A., late Puisne Judge and member of the Council of Bombay, addressed the Society on "The Recent Plague Epidemic in Bombay." (See page 130.) Dr. Birdwood treated both epidemics, indicated by contrast the extent to which climatic conditions probably influenced such epidemics, and described the remedial and preventive measures taken by the Government and the Municipality. He referred to the general scope of the Bill lately introduced into the Bombay Council for the sanitary renovation of Bombay. He also referred to the danger (if the plague is not stamped out) of a third epidemic, and a recession advance westwards, with a possibility that it may reach Europe. The danger to the whole world, and the possible increase of that danger if the plague is allowed to continue, was also pointed out. Dr. Birdwood illustrated his address with lantern slides, diagrams, and maps.

Some questions were asked, and replied to.

Dr. SINCLAIR moved, and Dr. ARNOLD LEA seconded, a very hearty vote of thanks to Dr. Birdwood for his very interesting, able, and valuable contribution to our knowledge of the terrible calamity now devastating a part of India. At the present juncture this carefully-prepared and authoritative

deliverance was most valuable. The motion was carried, and Dr. BIRDWOOD responded.

Mr. F. ZIMMERN (Hon. Secretary) moved a hearty vote of thanks to Dr. Ward for presiding, and to the Principal (Dr. Hopkinson) for the use of the theatre. Mr. J. HOWARD REED (Hon. Secretary) seconded the motion, which was carried.

In response, Dr. WARD said it gave him great pleasure to help the Society, and he hoped he might be able to do so again on some future occasion.

---

The 474th Meeting of the Society was held at the Peel Park Museum, Salford, on Wednesday, May 25th, 1898, at 3 p.m.

Mr. B. H. MULLEN, the curator, received the members, and accompanied them through the Museum. He showed them the new arrangement of the exhibits in the rooms, which have been admirably set out, and he then took the members to the fishery exhibition,\* where considerable time was spent whilst Mr. Mullen very carefully explained the meaning and intent of the exhibition, and where he gave most interesting information, illustrating his researches by the various items of this very instructive collection.

Very hearty thanks were given to Mr. Mullen for his very kind and able assistance.

---

The 475th Meeting of the Society was held in the Library, on Wednesday, June 15th, 1898, at 7-30 p.m. In the chair, the Rev. S. A. STEINTHAL.

The Minutes of Meetings held on May 13th (470 and 471), May 19th (472), and May 25th (473) were read and approved.

Correspondence was read from Mr. T. Dentith, Mr. George C. Haworth, Manchester Chamber of Commerce, Colonel Wells, Mr. W. Openshaw, Mr. S. Oppenheim, Mr. J. Howard Reed, Mr. H. C. Stewardson, Consul Bullock, Rev. J. Innocent, Mr. W. Ogilvie, Miss Millington, Mr. J. B. Sutton, Mr. Hewlett, Professor K. Jimbo (Tokyo), Mr. Grant, Professor Hopkinson, Rev. S. A. Steinthal, Mr. Cobe, Mr. J. R. Newby, Captain H. J. Conningham ((Jamaica), Mr. Henry Ling Roth, Professor Boyd-Dawkins, Captain Greenwood, Mr. W. T. Rothwell, Mr. H. Davies, Mr. John Angell, Captain Bertrand, and Miss Day.

The question to discuss was the excursion programme of the Society. Several suggestions were made by the Executive Committee, which were considered, and other suggestions were made. The whole matter was left in the hands of the officers of the Society for them to deal with.

---

The 476th Meeting of the Society was held at the Queen's Park Museum, on Saturday, June 18th, 1898, at 7 p.m. In the chair, Chevalier FRÖEHLICH.

A party of members visited Boggart Hole Clough in the afternoon, and were very much delighted with the development of this fine ground. They were pleased to see the wealth of foliage in the park and plantations, and were

---

\* This is an exhibition of the Lancashire Fishery Board, arranged to illustrate fish life on the West Coast of the North of England.



glad to know that many of the trees had been planted by Mr. Robert Moffatt when he lived in this district. The residence of Sam Bamford at Charlestown and in Hall Street and the house in Hall Street where Ben Brierley died were seen, and the Moston Institute was also visited, and "Throstle Glen," described so well by Mr. George Milner, was of considerable interest. The Lewis Recreation Ground was also seen.

The members were very much delighted with their visit to the Clough, and could not help expressing their delight at the excellent way the property is being laid out and their intense pleasure that a playground of so delightful a character has been secured for the public. They were very glad to hear from one of the gardeners that very little if any damage has been wilfully done since the grounds have been open.

Thanks were given to the gardener for his courtesy to the members.

A visit was then made to Queen's Park, which also was very much admired; but regret was expressed at the total disappearance of the old trees. The new statue to the late Ben Brierley was then examined and the new loan collection of pictures. The surprise of the members was great at this collection, and they wondered why such pictures should be exhibited. The members had a very pleasant meeting afterwards in the tea-room.

Very hearty thanks were given to the leaders of the excursion.

The 477th Meeting of the Society was held at the Boar's Head, Middleton, on Saturday, June 25th, 1898, at 6-30 p.m. In the chair, Mr. T. DENTITH.

A large party of members was received at Middleton by Mr. John Dean and by Mr. Cheetham.

The party were led into the graveyard, where Sam Bamford's monument, his grave, the grave of Samuel Barlow, of Stakehill, and the Hopwood vault were pointed out.

The party was led by Mr. Dean outside the church, where the architectural features were pointed out; and then inside the church, where the Flodden window, the water-colour drawings of the window, the sword and casque, the Hopwood pew, with the piscina, and the vestry, with the registers of births, deaths, and burials were seen.

After an exhaustive description had been given of the church, with some regard to the history of the great families who were formerly connected with the church and district, a visit was made, by permission of the rector, the Rev. T. E. Cleworth, to the rectory, where the beautiful oak room and the dry moat round the building were inspected with interest.

The Old Magpie public-house was also found interesting, with its old court-room and old oak chambers. The little park and Jubilee Library were examined after tea had been partaken of in the hotel.

Mr. J. THOMPSON moved a very hearty vote of thanks to the Rector, Mr. Dean, and Mr. Cheetham for their kind reception of the Society and for the assistance they had been in enabling the members to comprehend the value of the fine Middleton Church and its surroundings, to understand the history and geography of our own Lancashire.

\* \* In a future *Journal* a full account will be given of this fine old church.



# THE JOURNAL

OF THE

## MANCHESTER GEOGRAPHICAL SOCIETY.

---

### SHIPPING RINGS AND THE MANCHESTER COTTON TRADE.

By JOHN R. GALLOWAY.

[British Association. Section F. Economic Science and Statistics. And read by Delegate with his Report to the Society, in the Library.]

AN important item in connection with the bringing of goods to market is the cost of transportation, and as a spirit of hostility has been aroused at the manner in which Shipping Rings have controlled this particular department, let us see what justification there is for the feeling referred to.

The total annual value of our exports closely approximates to 280 millions sterling, and as one-fourth of this sum consists of Cotton Goods and Yarns, we shall expect to find some evidence in this particular trade if it has been injured or affected to any serious extent by Shipping Combinations.

The produce of Lancashire looms and spindles flows in a steady stream to every quarter of the globe, but it is to our Eastern and Far Eastern markets that supplies are so large and so constant, that shipowners may within certain limits calculate on a given number of steamers being required for their conveyance throughout the year.

It is not surprising that the volume and regularity of this traffic has called into existence well-established lines of steamships, whose equipment and general efficiency leaves little to be desired. Accidents or loss, due to want of care or foresight, are rarely heard of. But this has not always been so, for in the early years, when sailing vessels had to give place to the newer order of steamships, and especially after the opening of the Suez Canal in 1869, it was not uncommon for second or third-rate steamers to make a bid for the traffic by quoting low rates. As a means of protection against these outsiders, the older companies made common cause against the enemy, and entered into combinations of a more or less binding character, not merely to control rates, but to regulate the number and order of sailings. Here, then, we have the inception and origin of Shipping Rings. They were formed in a spirit not entirely hostile to shippers, but were the natural result and outcome of the competition referred to, which raged fiercely as each new combatant strove to gain a footing or command some portion of

VOL. XIV.—Nos. 7-9—JULY TO SEPT., 1898.

the trade, and continued until such time as peace was restored, either by absorption or defeat of the opposition. This is only another verification of Proudhon's saying that "Competition tends to kill competition."

Manchester shippers derived considerable benefit from low freights which resulted for the time being from this "cutting of rates," and as a consequence they adhered all the more faithfully to the idea embodied in that word "individualism," so dear to the Manchester school.

But as Shipping Rings have become more firmly established, mainly by the powerful but insidious rebate system, shippers find that their freedom of action is so crippled that they can no longer take advantage of cheap routes or freights which may offer. Competition, indeed, has been well-nigh silenced, and the burden of costly transportation is so heavy as to prove a serious tax if not endanger some branches of our national industry.

So long as producers were in a position to command most markets of the world, shippers had little or no occasion to grumble at rates or rebate systems; but now that other nations, with equal if not superior opportunities, have claimed and secured a not unimportant share of our export trade, and the fear or hope of England becoming the world's factory has had to be abandoned, it is not surprising that these altered conditions have made it necessary to carefully watch every item of expenditure in bringing goods to market. In other words, if England in this fierce conflict of modern industrialism is to retain her trade, producers and distributors alike must organise each department to the highest pitch of efficiency, and see that no barriers are raised within their dominions which would permanently interfere with natural expansion and development.

That our trade has been injured and is at present suffering from railway monopolies and the practical destruction of our insular canal system, is a matter, not merely of conjecture, but of actual knowledge and experience. In like manner Shipping Rings or Conferences constitute a danger which may easily become so great as to cripple those very industries which are the main support of our mercantile marine.

We propose to examine, therefore, the growth of Shipping Rings in connection with the cotton trade, and particularly, in the present paper, their influence on our exports to the East. We shall commence with the chief markets of India, and then pass on to the Straits Settlements, China, and Japan. For each market or group we will take:—

- (a) The figures of export from the Board of Trade returns,
- (b) Estimate as nearly as possible the cubic tonnage per annum,
- (c) Calculate the rates of freight charged to shippers,
- (d) Compare them with freights to other markets, and finally
- (e) Ascertain what rates are charged on cotton goods of foreign origin which enter into competition with our productions.

#### BOMBAY.

For this market it is desirable we should go back to the year 1881. Prior to that date nothing of importance had transpired beyond the incidents commonly experienced in all cases where important traffic is sought by a number of competitors. But in the year referred to,

the Bombay "Conference" or "Ring," consisting of the P. & O., Hall, Anchor, and Clan lines, having for the time overcome all opposition, fixed upon a "through" rate from Manchester to Bombay of 40s. per ton and 10 per cent *primage*. It may be mentioned in passing that *primage* was formerly an allowance paid by the shipper to captains of vessels for loading and taking charge of the cargo. Now, it is recognised merely as an addition to the freight. Under the circumstances, shippers considered the rate mentioned as fair and reasonable, but after a time the "Conference," thinking to improve the occasion, advanced it to 60s. per ton. Outside steamers appeared upon the scene and offered lower rates. The situation was met by the Conference offering to return 35s. out of the 60s. charged, to all who supported their steamers and did not patronise the opposition.

Manchester shippers up to this time had made no attempt at combination to oppose the Conference liners. Their past experience of a well-organised service, together with the advantages of occasional outside steamers and low rates, appeared sufficient to warrant a continuance of the policy which leaves all such matters to regulate themselves. But united action showed itself in an altogether unexpected quarter. It came from Bombay, where the native merchants had not been idle spectators of the game that was being played on this side. The old system of exporting goods in anticipation of market requirements was giving place to the new method whereby natives ordered their supplies at fixed prices under *Indent*. It became a matter of some moment to them, therefore, if having paid a price based upon a certain weight of freight they learned that the Manchester supplier was receiving returns or rebates varying in amount according to circumstances. They naturally desired to secure these advantages for themselves.

But a combination of natives was not seriously considered possible by either shippers or shipowners. Rumours that something of the kind was being organised, resulted in an effort on the part of shippers here to bind themselves to support only Conference liners at a fixed rate of 40s. per ton, for a given period. Unfortunately the great body of Manchester shippers entirely under-estimated the genius and capacity of Bombay natives to combine. While, therefore, negotiations were proceeding on this side, the Bombay indentors under the leadership of Mr. Damodur Goculdass, a Hindoo of exceptional business foresight and ability, formed themselves into a body called the "Bombay Native Piece Goods Merchants' Association." This would hardly have been possible if the English firm acting for Mr. Damodur had not taken the initiative and mainly by their guidance and direction brought the movement to a successful issue. Negotiations were opened with outside steamship owners, and almost at the moment when the 40s. rate was being decided upon here, an announcement was made that the Bombay Association had placed their first Freight Contract for the conveyance of all Manchester indent goods with Messrs. Hamilton, Fraser, & Co., of Liverpool, at a through rate of 30s. per ton. Even then it was not considered possible that the native combination would hold together many months; but, as the event happened in 1881 and the Association has continued in active existence ever since, it shows there was little ground for such an opinion.



Table I. gives particulars of the contracts entered into from the commencement to the present time.

TABLE I.—BOMBAY.

*Freight Contracts of the "Bombay Native Piece Goods Merchants' Association."*

Year.	Line of Steamers.	"Through" Rate of Freight from Manchester per ton of 40 feet.	Primage.	Returns.
1881	"Inch"	30/-	10%.	} Not ascertained.
1882	"Inch"	30/-	"	
1883	"Anchor"	19/-	"	
1884	"Clan"	17/6	"	
1885	"Clan"	17/6	"	
1886	} The Conference Lines including the "City," "Hall," "Anchor," and "Clan" Companies.	22/6	"	
1887		22/6	"	
1888		25/-	"	
1889		25/-	"	
1890		25/-	"	
1891		25/-	"	
1892		21/6	"	
1893		21/6	"	
1894		21/6	"	
1895		21/6	"	
1896		20/6	"	3/- per ton to Native Merchants Association.
1897		20/6	"	3/- per ton to Native Merchants Association.
1898 to 1900		20/6	"	3/- per ton to Native Merchants Association.

NOTE.—A "through" rate includes—

s.	d.	
1	2	per ton weight cartage Manchester Warehouse to Railway Station.
6	10	" " carriage Manchester to Birkenhead.
0	8	" " haulage at Birkenhead.
1	0	" " Liverpool Dock and Town Dues, or 3d. per pkg.
<hr/>		
9	8	

The keenest interest is shown by shipowners when a new contract is being negotiated; but, although the Conference liners have secured the contract for many years in succession, they have been unable to raise the rate to anything like the figures which were current seventeen or eighteen years since.

Notwithstanding this, an incident occurred in 1894 which shows how jealous they are of outsiders. In that year an attempt was made to wrest the contract from the liners, and the tender of a new company at a through rate of 20s. per ton was actually accepted by the Native Association. The native dealers issued circulars announcing the fact



and instructing correspondents in England that "all goods from 1st January, 1895, are to be shipped by steamers belonging to *The Manchester, Bombay, and General Navigation Co.*"

It appears, however, that some misunderstanding arose in connection with the rate, and owing to this hitch the Conference liners approached the new company, bought them out for the sum, it is said, of £11,000, with an important condition added, viz., that the members of the new company were to be debarred from tendering for the next two years. The details of what actually happened have never been published, but the fact remains that the contract was finally arranged with the Conference liners at the enhanced rate of 21s. 6d. per ton.

The advance was no doubt secured to recoup the Ring for the £11,000 said to have been paid to the "*Manchester, Bombay, and General Navigation Co.*," and the following calculation shows how much of this sum has been recovered from the Bombay indentors by increased freightage during the period covered by the arrangement:—

1895.	60,054 tons at	1s. 6d. per ton.	£4,504.
1896.	73,983	„ 6d. „	1,849.
1897.	62,411	„ 6d. „	1,560.
			<hr/> £7,913. <hr/>

Table II. gives the exports of Cotton goods to Bombay, taken from the Board of Trade returns for 17 years since the first freight contract was placed.

TABLE II.—BOMBAY.

*Exports of Cotton Goods and Yarns converted into Cubic Tons.*

(The small figures are from the Board of Trade Returns.)

Year.	Plain Cottons.		Printed Cottons.		Dyed & Coloured Cottons.		Yarn.		Total Tonnage.
	Yardage.	Cubic tons per 12,000 yds.	Yardage.	Cubic tons per 9,000 yds.	Yardage.	Cubic tons per 11,000 yds.	Lbs.	Cubic tons per 1,700 lbs.	
1881	408,629,300	34,058	87,189,000	9,687	49,044,900	4,458	12,771,900	7,513	55,716
1882	379,995,800	31,667	81,065,000	9,007	45,600,000	4,145	11,579,100	6,811	51,630
1883	447,707,400	37,309	95,512,000	10,612	53,726,000	4,884	15,337,800	9,022	61,827
1884	451,725,400	37,644	96,368,000	10,708	54,207,000	4,928	14,666,600	8,627	61,907
1885	452,532,800	37,711	96,540,500	10,727	54,303,500	4,937	14,728,500	8,664	62,039
1886	598,332,650	49,861	127,644,320	14,183	71,799,930	6,527	16,105,500	9,474	80,045
1887	485,770,500	40,481	103,631,000	11,515	58,292,500	5,299	16,282,200	9,578	66,873
1888	588,762,800	49,064	125,603,400	13,956	70,852,300	6,423	19,351,500	11,383	80,826
1889	580,856,900	48,405	128,262,400	14,251	65,848,900	5,941	15,265,400	8,980	77,577
1890	596,954,600	49,746	111,796,700	12,422	81,268,500	7,388	18,347,600	10,793	80,349
1891	534,528,900	44,544	104,977,900	11,664	51,936,700	4,722	17,168,130	10,099	71,029
1892	515,215,300	42,935	124,682,800	13,853	65,144,100	5,922	14,525,800	8,544	71,254
1893	505,095,200	42,091	131,238,800	14,582	72,805,800	6,624	10,912,100	6,419	69,716
1894	690,762,200	57,563	150,584,400	16,732	84,356,100	7,669	18,273,800	7,808	89,772
1895	438,438,300	36,536	96,233,800	10,693	57,841,400	5,258	12,863,500	7,567	60,054
1896	514,110,700	42,842	139,269,500	15,474	75,926,200	6,902	14,900,100	8,765	73,983
1897	493,986,330	41,166	75,484,000	8,387	48,101,300	4,373	14,425,300	8,485	62,411
Total..	723,623		208,453		96,400		148,532	1,177,008	

The cubic tonnage has been arrived at as follows :—

*Plain Cottons*—i.e., greys and whites—range from 5,000 to 16,850 yards per cubic ton, or say a mean average of all descriptions of 12,000 yards.

*Printed Cottons* range from 6,850 to 11,520 yards per cubic ton, or say a mean average of 9,000 yards.

*Dyed and Coloured Cottons* range from 4,100 to 19,300 yards per cubic ton, or say a mean average of 11,000 yards.

*Yarn* does not vary much, and a liberal average will be 1,700 lbs. per cubic ton.

Until 1889 the Board of Trade did not give the yardage separately for each description, so that the figures for all years previous to 1889 have been divided on a basis of the averages for 1889—1897, viz.:

75 per cent Plain Cottons.

16 per cent Printed Cottons.

9 per cent Dyed and Coloured Cottons.

100 per cent.

The cubic tonnage for each class has been calculated according to particulars given at the foot of the table. The fluctuations shown from year to year are of interest; but if we take the tonnage of Table II. in conjunction with the rates given in Table I., we shall be able to ascertain, approximately, the total freightage for the period. This is shown in Table III.

TABLE III.—BOMBAY.

*Freights on Cotton Goods since the formation of the "Bombay Native Piece Goods Merchants' Association" in 1881.*

Year.	Annual Tonnage as per Table II.	Nett Through Rate from Manchester per Ton of 40 feet.	Approximate Amount of Freight.
	Tons.	s. d.	£
1881 .....	55,716	33 0	91,931
1882 .....	51,630	33 0	85,190
1883 .....	61,827	20 11	64,661
1884 .....	61,907	19 3	59,585
1885 .....	62,039	19 3	59,712
1886 .....	80,045	24 9	99,055
1887 .....	66,873	24 9	82,755
1888 .....	80,826	27 6	111,135
1889 .....	77,577	27 6	106,670
1890 .....	80,349	27 6	110,480
1891 .....	71,029	27 6	97,665
1892 .....	71,254	23 8	84,317
1893 .....	69,716	23 8	82,497
1894 .....	89,772	23 8	106,230
1895 .....	60,054	23 8	71,064
1896 .....	73,983	22 6 $\frac{1}{2}$	83,385
1897 .....	62,411	22 6 $\frac{1}{2}$	70,342
	1,177,008		£1,466,674

N.B.—For particulars of a "through" rate see note to Table I.

We can now form an estimate of the saving effected by the action of the Bombay Native Association, and in doing so we must not forget that it was the extortionate rate of 60s. imposed by the Conference which caused the combination referred to.

It is hardly possible to suppose that this figure could have been maintained for more than a few months, and therefore a purely empirical calculation would result if we compared it with the actual rates paid during the whole period. It might even be urged that if we took the rate which most of the Manchester shippers were prepared to accept from the Conference in 1881, viz., 40s. per ton, we should be over-stating the case. To be entirely free from exaggeration let us take 30s. as a basis for comparison.

Freight at 30s. and primage on 1,177,008 tons as per Table III.....	£1,942,063
Freight for 17 years on 1,177,008 tons as per Table III. ....	£1,466,674
<hr/>	
The result shows a saving on a moderate com- putation of .....	£475,389.
<hr/>	

or equal to £28,000 per annum, an achievement which must be highly satisfactory to the Bombay Association.

It will be seen that freights to Bombay during the past seventeen years, under the various contracts, have been very favourable for Manchester goods, and it is hardly necessary to compare them with those charged to other ports; but to show how arbitrary the various Conferences are in fixing these rates, let us give a few instances. Rates on cottons "through" from Manchester per ton of 40 feet, including all transport charges:—

- 25s. to Tunis, one-fourth the distance to Bombay.
- 15s. „ Malta, a few miles further than Tunis.
- 20s. „ Constantinople, less than half the distance to Bombay.
- 50s. „ Aden, little more than two-thirds of the distance to Bombay.

One may freely admit that it is impossible to fix freights in exact proportion to distance. Many factors enter into the calculation of a rate, but under present circumstances the chief factor, viz., the supplier of the goods, who has to pay, is never taken into account or consulted.

We have still to quote the rates from the chief Continental ports on cotton goods to Bombay. They are as follow:—

From Hamburg to Bombay, 22s. 6d. per cubic ton nett.			
„ Antwerp „ 22s. 6d.	„	„	„
„ Rotterdam „ 25s. 0d.	„	„	„

It will be seen that Lancashire spinners and manufacturers, with their present rate of 20s. 6d., have nothing to complain of here.

Before leaving Bombay freights, there remain two points to be mentioned. Cotton goods from Manchester are charged under the contract 20s. 6d., but from Glasgow the rate is only 15s. 6d., or, say,

with Clyde dues, 17s. 2d. per ton. When a steamer loads at Birkenhead, the cost of inland carriage must be added, but as the contract stipulates for four steamers a month to load at Manchester, it is strange that the indentors have not arranged for an abatement in those cases where a saving in the carriage is effected by direct shipment at the Manchester Docks. The result is that Glasgow enjoys a preferential rate as against Manchester.

#### REBATES.

The other point which must not be omitted has reference to rebates or returns. These are sums paid by the shipper in the form of freight, which, providing he confines his shipments to Conference steamers, will be returned to him by the shipowner at long or short periods according to arrangement. Hundreds and thousands of pounds representing these returns are accumulated in this way, and there is little doubt that a considerable profit is made by the Ring out of rebates which are forfeited or never claimed by shippers.

But it will be seen from Table I. that for some years past 3s. per ton has been allowed as rebate to the members of the Native Piece Goods Merchants' Association, and although similar returns were doubtless given in other years, it has not been possible to obtain particulars. The interesting fact is that not only have the Bombay natives managed to secure low freights, but they have copied the shipowners' rebate system, and used it to their own advantage.

The triangular contest between importers, exporters, and Shipping Rings in connection with this Bombay traffic, is full of object lessons for traders to other markets, and it remains to be seen how far they will profit by them.

#### DISTANCES.

The following steaming distances are given for future reference, as this factor has an important bearing upon the cost of transportation :—

Steaming distance from London to Bombay,	6,274 miles.
"    "    "    "    Madras,	7,313 "
"    "    "    "    Calcutta,	7,967 "
"    "    "    "    Rangoon,	8,162 "
"    "    "    "    Penang	7,981 "
"    "    "    "    Singapore,	8,362 "
"    "    "    "    Hong Kong,	9,799 "
"    "    "    "    Shanghai,	10,669 "
"    "    "    "    Yokohama,	11,601 "

#### CALCUTTA, MADRAS, AND RANGOON.

It is not necessary to go back to 1881, as in the case of Bombay, for the history of freights to the above ports is one unbroken record of shippers having to submit to the terms imposed by "Rings" or "Conferences," and it will be sufficient therefore if we state the figures for the past ten years. Committees of exporters to Calcutta and Madras have from time to time been formed for the purpose of safeguarding the interests of shippers to those markets, and in certain minor matters



they have succeeded; but when the serious question of fixing a rate of freight has come up for discussion, they have rarely been able to exert effective influence. The fact, however, that Bombay contracts have been in existence for the time named, must not be overlooked, for they undoubtedly have exerted a controlling effect on the rates charged to Calcutta, and in a less degree on those to Madras and Rangoon. Each of these ports is managed by a separate "Ring" or "Conference," but members of one Ring are almost invariably members of one of the others.

The Board of Trade figures of exports will be found in the official list under two heads, viz., "Bengal and Burmah" and "Madras," but as 77 per cent of the cottons included in this group go to Calcutta, we propose to classify them together.

TABLE IV.—CALCUTTA, MADRAS, AND BURMAH.

*Exports of Cotton Goods and Yarns converted into Cubic Tons.*

(The small figures are from the Board of Trade returns.)

Year.	Plain Cottons.		Printed Cottons.		Dyed and Coloured Cottons.		Yarn.		Total Tonnage.
	Yardage.	Cubic Tons per 12,000 Yds.	Yardage.	Cubic Tons per 9,000 yds.	Yardage.	Cubic Tons per 11,000 yds.	Lbs.	Cubic Tons per 1,700 lbs.	
1888	1,087,604,600	90,634	75,007,400	8,844	87,508,400	7,955	34,717,500	20,422	127,345
1889	1,026,814,800	85,568	84,106,700	9,345	115,762,700	10,524	30,087,900	17,699	123,136
1890	1,078,378,000	89,865	67,846,000	7,538	84,784,700	7,708	31,386,400	18,462	123,573
1891	998,058,000	82,755	74,768,600	8,308	77,121,800	7,011	32,821,700	19,307	117,381
1892	1,012,777,800	84,400	60,492,700	6,721	72,558,800	6,596	24,979,400	14,694	112,411
1893	1,019,085,900	84,924	71,436,100	7,937	88,562,500	8,051	27,626,300	16,251	117,163
1894	1,172,442,000	97,703	75,198,000	8,355	108,099,900	9,373	26,762,200	15,742	131,173
1895	1,001,284,200	83,440	63,463,400	7,052	60,941,500	5,540	28,207,100	16,592	112,624
1896	1,151,279,700	95,940	78,549,800	8,727	78,611,100	7,146	34,263,400	20,155	131,968
1897	1,019,751,300	84,979	61,294,700	6,810	60,156,000	5,469	33,270,800	19,571	116,829
	Total..	880,208		79,127		75,373		178,895	1,213,603

Until 1889 the Board of Trade did not give the yardage separately for each description, so that the figures for 1888 have been divided on a basis of the averages for 1889-97, viz. :—

87 per cent Plain Cottons.  
6 per cent Printed Cottons.  
7 per cent Dyed, &c., Cottons.

100 per cent.

In arriving at the Cubic Tonnage the same quantities as for Bombay have been taken, for although the percentage of Plain Cottons is larger for the above markets, the descriptions are very similar.

In the above table the yardage has been converted into cubic tons on the same basis as calculated for Bombay, with an allowance so ample that the tonnage may be said to be rather under than over-estimated.

The average annual shipments amount to 121,360 tons, the serious falling off in 1897 being accounted for, not only by the famine, but also in consequence of exports in 1896 being abnormally large.

Having ascertained the tonnage, we have next to examine the freights charged on this merchandise, and, as will be seen from the following table, the rates have varied from 20s. to 40s. per ton.

TABLE V.—CALCUTTA.

*Freights on Cotton Goods for the last Ten Years.*

Year.	Annual Tonnage as per Table IV.	Through Rates of Freight from Manchester and Returns.*			Approximate Average Nett Through Rate.	Approximate Amount of Freight.
		Highest. Plus prime	Lowest. age, 10%.	Returns.		
1888	127,845	35/-	35/-	—	38/6	£ 245,139
1889	123,136	40/-	40/-	—	44/-	270,899
1890	123,573	40/-	40/-	—	44/-	271,860
1891	117,381	40/-	35/-	{ 8/- off 40/- 7/6 „ 35/-	} 34/9	203,949
1892	112,411	27/6	20/-	5/- „ 27/6		
1893	117,163	32/6	32/6	5/9	30/-	175,744
1894	131,173	32/6	32/6	5/9	30/-	196,759
1895	112,624	30/-	27/6	{ 5/6 off 30/- 5/3 „ 27/6	} 25/6	143,595
1896	131,968	32/6	32/6	5/9		
1897	116,829	32/6	32/6	5/9	30/-	197,952
					30/-	175,243

\* For particulars of a “through” rate, see note to Table I.

The average nett rates in above tables are calculated for the year, the fluctuations being much more frequent than might be inferred from the fact that the highest and lowest figures only are quoted. These fluctuations arose almost entirely from dissensions in the “Rings,” and cannot be traced to any action or combination on the part of shippers.

A reference to Table I. will show that the nett rate received by the shipowners has for some years been 19s. 6d. per ton, after deducting returns, for cotton goods to Bombay, while that for Calcutta during the same period has been 30s. nett. But, as already stated, these rates are “through” from Manchester, and include items of carriage, etc., as per particulars given at foot of Table I., amounting to 9s. 8d. per ton weight, or, say, fully 8s. per ton measurement.

The nett freight, therefore, received by the steamship owners would be—

BOMBAY.		CALCUTTA.	
	s. d.		s. d.
	19 6		30 0
Less carriage, etc.	8 0		8 0
	<u>11 6</u>		<u>22 0</u>
			per cubic ton,
			„ „
			„ „

As, however, the port of Calcutta is 1,692 miles further by sea than Bombay, the additional cost of steaming must be added. The extra mileage is equal to about 25 per cent of the distance to Bombay; but as 11s. 6d. and 22s. respectively include other fixed items, such as Suez Canal dues, we should still be over-estimating the cost of transport to Calcutta if we added 25 per cent to the Bombay figure. Let us, however, be liberal to the shipowners and do this—11s. 6d. plus 25 per cent equals 14s. 4d. per ton which gives us what we may call the fair rate for Calcutta as against 22s. actually paid.

That is to say, Calcutta shippers have for years paid 7s. 8d. per ton more, in proportion, than is justified by the rate ruling to Bombay. The average annual tonnage being 121,360 tons the overcharge amounts to upwards of £47,000 per annum, and the sum would no doubt have been considerably larger if the Bombay freights contracts had not exerted a certain influence on the rates charged to Calcutta.

As already mentioned, the exports to Madras and Rangoon are included in this group, but the rates of freight have not been given. They are fixed by the different "Conferences," and vary from 5s. to 10s. higher than those ruling to Calcutta, notwithstanding that Madras is 600 miles nearer, and Rangoon only 200 miles further steaming distance, than Calcutta. A closer examination of these cases, therefore, would only strengthen the arguments already adduced in connection with Calcutta, which point to the conclusion that freights to these ports are higher than they would be if an effective combination could be formed to deal with the Shipping Rings, as in the case of Bombay.

We have still to compare the rates paid by Manchester shippers with those charged on cottons from Continental ports to Calcutta.

	s.	d.	
From Hamburg	25	0	per cubic ton nett.
" Antwerp	27	6	" " "
" Rotterdam <i>via</i> Antwerp	27	6	" " "

Here again the Manchester shipper is at a disadvantage, although the difference is not so important as in other cases. The figures are as follow:—

	£	s.	d.
Freight from Manchester for 1897, as per Table V.,			
116,829 tons at 30/- net .....	175,243	0	0
Freight from Hamburg would have been at 25/6 nett .....	146,036	0	0
In favour of Hamburg.....	£29,207	0	0

The difference represents a saving of a good round sum per annum; but the German supplier is in a still better position, for, untrammelled by rebate conditions, he is free to take advantage of cheap freights which from time to time are offered by outsiders.

#### THE STRAITS SETTLEMENTS (SINGAPORE AND PENANG).

A statement of the exports of cotton goods for the past ten years to the above markets is given in Table VI., with the cubic tonnage calculated according to a basis which applies specially to goods for these ports, and particulars of which are furnished at the foot of the table.



TABLE VI.—STRAITS SETTLEMENTS (Singapore and Penang).  
*Exports of Cotton Goods and Yarns, converted into Cubic Tons.*  
 (The small figures are from the Board of Trade Returns.)

Year.	Plain Cottons.		Printed Cottons.		Dyed & Coloured Cottons.		Yarn.		Total Tonnage.
	Yardage.	Cubic Tons per 9,000 Yards.	Yardage.	Cubic Tons per 9,000 Yards.	Yardage.	Cubic Tons per 9,000 Yards.	Lbs.	Cubic Tons per 1,700 lbs.	
1888	114,460,000	12,717	24,368,900	2,708	8,861,400	985	3,046,800	1,792	18,202
1889	95,159,000	10,573	18,971,900	2,108	6,902,100	767	3,189,100	1,876	15,324
1890	119,487,800	13,276	24,790,900	2,755	6,925,400	770	2,631,000	1,548	18,349
1891	86,926,600	9,658	16,896,300	1,877	7,524,800	836	2,682,700	1,755	14,126
1892	86,782,700	9,643	16,305,200	1,812	5,402,700	600	2,463,100	1,449	13,504
1893	59,866,400	6,596	15,467,400	1,719	4,025,800	447	1,298,600	761	9,523
1894	95,520,300	10,613	21,838,200	2,371	6,814,600	757	3,085,200	1,815	15,556
1895	81,073,600	9,008	14,689,200	1,632	7,317,000	813	3,224,500	1,897	13,350
1896	72,046,900	8,005	17,486,700	1,943	7,141,700	793	2,699,700	1,588	12,329
1897	84,258,500	9,362	21,001,500	2,333	8,581,400	953	2,923,000	1,719	14,367
Total....		99,451		21,258		7,721		16,200	144,630

The cubic tonnage has been arrived at as follows :—

*Plain Cottons, i.e., Greys and Whites,* range from 5,000 to 10,000 yards per cubic ton, and as packages are rather smaller than for India, the mean average will only be about 9,000 yards.

*Printed Cottons* range from 4,000 yards to 11,000 yards per cubic ton, or say a mean average of 9,000 yards.

*Dyed, etc., Cottons* range from 5,500 to 14,000 yards per cubic ton, or say a mean average of 9,000 yards.

*Yarn* does not vary much, and a liberal average will be 1,700 lbs. to the cubic ton.

Until 1889 the Board of Trade did not give the yardage separately for each description, so that the figures for 1888 have been divided on a basis of the averages for 1889-1897, viz. :—

77½ per cent Plain Cottons  
 16½ per cent Printed Cottons  
 6 per cent Dyed, &c., Cottons

100 per cent.

It will be seen that the tonnage is very much smaller than for any of the other ports or groups mentioned, but it should not be ignored on that account, for the traffic does not require a special service of steamers. It is worked in conjunction with the liners trading to Far Eastern ports and controlled by one of the largest and most powerful combinations or "Conference" of steamship companies.

They are described in the "rebate" form as the "Ocean Steamship Co., P. & O., M.M. Co., N.G.L., Glen, Shire, Ben, Mutual, Mogul, and N.Y.K." The decline in tonnage observable from the above table in recent years is no doubt due to the excessively high rates from England, but also because of supplies, which were formerly shipped to Singapore as an entrepôt for other Eastern markets, now going in direct steamers to their particular ports of destination.

In the following table will be found particulars of the highest and lowest rates ruling in each year, with the tonnage calculated at the nett average of rates.



TABLE VII.—STRAITS SETTLEMENTS (Singapore and Penang).

*Freights on Cotton Goods for the last Ten Years.*

Year.	Annual Tonnage as per Table VI.	Heavy Goods. Freights from Liverpool and Returns.*			Approximate Average Nett Rate.	Approximate Amount of Freight.
		Highest.	Lowest.	Rebate.		
		Plus pri	mage 5%			
1888	18,202	52/6	20/-	10%	29/-	£ 26,393
1889	15,324	37/6	27/6	"	29/6	22,602
1890	18,349	37/6	30/-	"	32/-	29,358
1891	14,126	30/-	25/-	"	26/-	18,364
1892	13,504	32/6	25/-	"	26/6	17,893
1893	9,523	42/6	32/6	"	38/-	18,094
1894	15,556	42/6	37/6	"	38/6	29,945
1895	13,350	42/6	37/6	"	36/6	24,363
1896	12,329	42/6	32/6	"	34/-	20,959
1897	14,367	40/-	37/6	"	37/6	26,938

The rates given above are for Heavy Goods, which constitute the bulk of the Shipments: that is to say, they weigh over 12 cwt. to the ton of 40 cubic feet. The rate for Light Goods, which must come under 12 cwt. for the ton measurement, is usually 5/- per ton less. Some months ago, the rates were increased, and now stand at 37/6 and 42/6 for light and heavy goods respectively.

\* These are known as "local" rates, and must be distinguished from "through" rates, as charged to India. In the case of "local" rates, the Shipper has to pay all items of carriage and cartage, etc., as set forth in the note to Table I. amounting to 9/8 per ton weight.

The average given is not of the two rates mentioned, but for the whole year, and for some months past the rate has been raised, and is, at the present time, 42s. 6d. per ton for heavy cotton goods. It must not be forgotten, however, that this is a "local" rate and does not include carriage or any other charge at the port of shipment. To compare it with the rates ruling to Bombay and Calcutta, which, as already stated, are "through" rates, we must add the items given at the foot of Table I., which are equal to at least 8s. per ton measurement. We then get the following:—

Nett rates per ton of 40 feet.

19s. 6d. for transportation of cotton goods from Manchester to Bombay.

30s. for transportation of cotton goods from Manchester to Calcutta.

48s. for transportation of cotton goods from Manchester to Singapore and Penang.

A reference to the table of distances shows that while Calcutta is 7,967 miles, Penang is 7,981 and Singapore 8,362. The additional cost of transportation on account of distance can be very little more than to Calcutta, and yet the rate is exactly 60 per cent higher.

It would appear from these figures that our freight bill to the Straits markets is much heavier than it should be; but if we compare our rates with those current on the Continent to the same ports, we shall see at once how great the disadvantage is which Manchester shippers labour under. The figures are as follow:—

From Hamburg	to Singapore.....	s. d. 22 6	per cubic ton,
" Antwerp	" .....	27 6	" "
" Rotterdam <i>via</i> Antwerp	" .....	26 0	" "
" Manchester to Singapore and Penang .....		48 0	" "

That is to say, the Manchester shipper has to pay more than double freightage as compared with his competitor in Hamburg. To put the matter in another way, the exports for 1897 of Manchester goods to Singapore and Penang totalled to 14,367 tons, valued according to the Board of Trade returns at £1,148,261.

Shipping from Manchester cost 48/- per ton.....	=	£	s.	d.
" Hamburg would have cost 22/6 per ton =		34,481	0	0
		16,163	0	0

Paid extra by Manchester Shippers 25/6 per ton ..... = £18,318 0 0

That is to say, the item of freight from Manchester amounted to 3 per cent on the value of the goods, whereas if shipped from Hamburg it would only have been 1·46 per cent, or less than half. The difference represents a handsome working commission for the Manchester shipper.

#### CHINA AND JAPAN.

As the rates of freight for Manchester goods to China and Japanese ports have for a considerable period been the same, it will simplify matters if we take them together. Moreover they are fixed by the China Conference, a very formidable combination as will be seen from the lines composing the Ring already mentioned when dealing with the Straits markets.

We will now give the figures of exports for each market, the yardage, etc., having been converted into cubic tons of 40 feet, on a basis which applies specially to the goods for the different countries, with ample allowance to avoid exaggeration.

TABLE VIII.—CHINA AND HONG KONG.

*Exports of Cotton Goods and Yarns converted into Cubic Tons.*

(The small figures are from the Board of Trade Returns.

Year.	Plain Cottons.		Printed Cottons.		Dyed and Coloured Cottons.		Yarn.		Total Tonnage.
	Yardage.	Cubic Tons per 9,000 yds.	Yardage.	Cubic Tons per 6,000 yds.	Yardage.	Cubic Tons per 6,000 yds.	Lbs.	Cubic Tons per 1,700 lbs.	
1888	491,237,800	<b>54,582</b>	28,727,600	<b>4,788</b>	54,582,100	<b>9,097</b>	17,474,033	<b>10,280</b>	<b>78,747</b>
1889	434,591,100	<b>48,288</b>	12,681,400	<b>2,114</b>	27,153,600	<b>4,526</b>	8,828,900	<b>5,194</b>	<b>60,122</b>
1890	503,880,600	<b>55,987</b>	25,871,100	<b>4,312</b>	40,545,100	<b>6,757</b>	14,768,900	<b>8,687</b>	<b>75,743</b>
1891	462,829,000	<b>51,425</b>	24,681,003	<b>4,114</b>	46,627,000	<b>7,771</b>	13,144,803	<b>7,732</b>	<b>71,042</b>
1892	426,135,600	<b>47,348</b>	25,857,600	<b>4,309</b>	45,407,090	<b>7,568</b>	8,501,300	<b>5,000</b>	<b>64,225</b>
1893	309,163,300	<b>34,351</b>	20,595,203	<b>3,433</b>	35,638,600	<b>5,940</b>	8,769,509	<b>5,159</b>	<b>48,883</b>
1894	369,609,800	<b>41,067</b>	17,206,400	<b>2,868</b>	38,523,200	<b>6,421</b>	9,679,500	<b>5,694</b>	<b>56,050</b>
1895	458,149,300	<b>50,905</b>	24,473,700	<b>4,079</b>	45,521,900	<b>7,587</b>	11,224,800	<b>6,603</b>	<b>69,174</b>
1896	415,112,900	<b>46,124</b>	48,174,300	<b>8,029</b>	79,527,500	<b>13,254</b>	9,076,400	<b>5,339</b>	<b>72,746</b>
1897	365,640,500	<b>40,627</b>	24,468,900	<b>4,078</b>	55,072,700	<b>9,179</b>	11,246,000	<b>6,615</b>	<b>60,499</b>
Total..		<b>470,704</b>		<b>42,124</b>		<b>78,100</b>		<b>66,303</b>	<b>657,231</b>

The cubic tonnage has been arrived at as follows :—

*Plain Cottons.*—Both Grey and White descriptions are coarser on the average than those shipped to India; and, moreover, not so heavily pressed, so that a liberal mean average will be 9,000 yards per cubic ton.

*Printed and Dyed, &c., Cottons.*—The same remarks apply to these, some descriptions falling to 3,260 yards to a cubic ton. They have both been taken together, at the mean average of 6,000 yards per cubic ton.

*Yarns.*—The figure for other Eastern markets is a full one, viz., 1,700 lbs. per cubic ton.

Until 1889 the Board of Trade did not give the yardage separately for each description, so that the figures for 1888 have been divided on a basis of the average for 1889-1897, viz. :—

85½ per cent Plain Cottons.  
5 per cent Printed Cottons.  
9½ per cent Dyed Cotton.

100 per cent.

TABLE IX.—JAPAN.

*Exports of Cotton Goods and Yarns Converted into Cubic Tons.*

(The small figures are from the Board of Trade Returns.)

Year.	Plain Cottons.		Printed Cottons		Dyed and Coloured Cottons.		Yarns.		Total Tonnage.
	Yardage.	Cubic tons per 9,500 yds.	Yardage.	Cubic tons per 6,000 yds.	Yardage.	Cubic tons per 6,000 yds.	Lbs.	Cubic tons per 1,700 lbs.	
1888	53,720,900	5,655	7,396,300	1,233	16,729,200	2,790	27,168,600	15,982	25,660
1889	56,605,400	5,958	7,408,700	1,234	18,562,900	3,094	26,832,600	15,784	26,070
1890	42,937,700	4,520	7,818,900	1,303	12,552,800	2,022	23,100,500	13,589	21,504
1891	44,945,200	4,731	2,291,600	382	13,883,300	2,314	14,826,600	8,722	16,149
1892	52,314,500	5,507	6,249,500	1,042	16,616,500	2,769	23,384,900	13,756	23,074
1893	43,256,500	4,553	8,180,100	1,363	16,871,200	2,812	18,963,800	11,155	19,883
1894	50,293,000	5,294	6,081,400	1,014	15,228,800	2,538	14,638,800	8,611	17,457
1895	77,770,300	8,186	6,770,600	1,128	14,492,000	2,415	21,266,000	12,509	24,238
1896	63,464,500	6,680	13,026,200	2,171	28,793,000	4,799	22,736,900	13,375	27,025
1897	64,908,700	6,832	10,701,800	1,784	18,451,200	3,075	23,142,600	13,613	25,304
Total..		57,916		12,654		28,698		127,086	226,364

The cubic tonnage has been arrived at as follows :—

*Plain Cottons.*—Greys will average about 9,600 yards, and Whites 7,500 yards; so that a liberal figure will be 9,500 yards per cubic ton.

*Printed and Dyed, &c., Cottons* are similar in bulk to those shipped to China, so they are taken at the same figure, viz., 6,000 yards per cubic ton.

*Yarn.*—The same figure as for other Eastern markets is maintained, viz., 1,700 lbs. per cubic ton.

Until 1889 the Board of Trade did not give the yardage separately for each description, so that the figures for 1888 have been divided on a basis of the averages for 1889-1897, viz. :

69½ per cent Plain Cottons.  
9 per cent Printed Cottons.  
21½ per cent Dyed Cottons.

100 per cent.

It will be observed that considerably more than half our exports to Japan consists of yarn, and, as the following table shows, special



provision is made for this article, the Conference lines taking it to both China and Japan at rates considerably below those for heavy goods. This concession is granted in consequence of heavy competing shipments of yarn to the same markets from Bombay.

TABLE X.

*Rates of Freight of Cotton Goods and Yarns to China and Japan  
from Liverpool.*

Year.	Month.	Rates per ton of 40 feet.			Primage.	Returns.
		Heavy Goods.	Light Goods.	Yarns.		
1888.....	January .....	57/6	37/6	52/6	5%	10%
	April .....	30/-	27/6	27/6	"	"
	September .....	22/6	20/-	20/-	"	"
1889.....	February .....	32/6	...	27/6	"	"
	August .....	27/6	20/-	20/-	nett	nett
	October .....	25/-	17/6	17/6	nett	nett
	November.....	25/-	15/-	15/-	nett	nett
	December .....	35/-	25/-	25/-	5%	10%
1890.....	February .....	37/6	25/-	25/-	"	"
	April .....	37/6	...	20/-	nett	nett
	May .....	37/6	25/-	25/-	nett	nett
1891.....	September... ..	42/6	37/6	37/6	5%	10%
	.....	42/6	35/-	35/-	"	"
1892.....	Sept.-Dec.....	47/6	40/-	{ 40/- 27/6	"	"
1893.....	.....	55/-	47/6	40/-	"	"
1894.....	.....	55/-	47/6	40/-	"	"
1895.....	Jan.-June .....	55/-	47/6	40/-	"	"
	June-Dec. ....	47/6	40/-	35/-	"	"
1896 .....	Jan.-June .....	47/6	40/-	35/-	"	"
1897.....	Jan.-March .....	55/-	47/6	40/-	"	"
	March-Dec. ....	55/-	40/-	40/-	"	"

NOTE.—Although the above rates are taken from authentic sources, it is possible that some discrepancies may be found, as at times of keen competition it was not the invariable custom to charge all shippers alike.

A glance at Table X. will show that this Conference, all powerful as it is, has not attained its present position without a constant succession of freight wars. The fluctuations in the early years were especially numerous, 57s. 6d. and 22s. 6d. for heavy goods representing the high and low-water marks touched during the period. The rates for "light" goods—that is to say, those weighing under 12 cwt. for the ton measurement—are also given; but, as the proportion of such is comparatively small, they need not be taken into account. In no case can the variations shown on this table be traced to united action on the part of Manchester shippers. They arose mainly from the desire of some outside company to enter the combination and participate in the profits of this close monopoly. Experience shows that it is only necessary to continue the struggle long enough and admittance is certain to be gained. The share of spoil is slightly reduced, but every



new member means an accession of strength, which makes the corporation more powerful against both new comers and the general body of shippers. Evidence of this is found in the higher rates of freight which have ruled for later years, during which time there has been little or no opposition.

One of the most interesting incidents in connection with this particular trade is the founding of "The China Shippers' Mutual Steam Navigation Co." The prospectus issued in 1882 states that the company was formed "in no spirit of rivalry with existing lines." Its distinctive feature was the "introduction of the mutual co-operation principle" to the carrying trade. The gross freight to China and Japan was estimated then at £3,000,000 per annum. This, with the natural increase, afforded "ample guarantees for the stability, etc., of the company." While on the one hand the promoters stated that "The average rates of freight would enable supporters of the company and the general body of shareholders to participate in the large profits which the China steam carrying trade incontestably yields," they added that "a secondary but highly-important end which the establishment of the company will secure is *the liberation of shippers from the imposition of conditions adverse to their interests.*"

It is not surprising, therefore, that with such tempting conditions quite a number of Manchester shippers became shareholders.

In due time the first steamer was despatched, and in the next annual statement we read—

"The directors further desire to acknowledge the hearty co-operation of the many contributing shareholders, and the manifestations of goodwill shown to them by competitors of the trade."

The hearty co-operation referred to was obtained at considerable sacrifice, for the China "Conference" insisted upon shippers forfeiting the rebate in every instance where support had been given to the new company. Then as to the "manifestations of goodwill," these came from owners of the Conference lines, for with the second opposition steamer, terms had been arranged, and all sailings for a considerable period were under the auspices of the "Ring." When, however, after the lapse of a year or two the new company decided to make its sailings from Liverpool, a rupture took place, and they were strenuously opposed by the old combination.

A rate-cutting competition ensued, but the China Mutual managed to struggle on. Dividends, although of modest dimensions, were regularly paid, and, above all, the fleet was increased. In 1891 the high hopes expressed in the original prospectus were finally abandoned; for in that year the company was re-constructed, changed its name from the "China Shippers' Mutual Steam Navigation Co." to the "China Mutual Steam Navigation Co." and entered into full possession of the rights and privileges of the China Conference. This episode demonstrates in the clearest manner possible that there is a difference between the interests of shipper and shipowner, and that it is difficult to reconcile those who are struggling on the one hand for low rates with those whose business it is to keep them as high as possible.

Some idea can be formed from the tables given below of the annual freight on cotton goods to China and Japan. An approximate average rate has been arrived at for each year.

TABLE XI.—CHINA (Hong Kong and Shanghai).  
*Freights on Cotton Goods for the last Ten Years.*

Year.	Annual Tonnage as per Table VIII.	Heavy Goods.—Freights from Liverpool and Returns. *			Approximate Average Nett Rate.	Approximate Amount of Freight.
		Highest Plus Primage,	Lowest age, 5%.	Returns.		
1888	78,747	57/6	22/6	10%	37/2	£ 146,338
1889	60,122	45/-	27/6	"	33/11	101,956
1890	75,743	47/6	32/6	"	40/-	151,486
1891	71,042	47/6	20/-	"	31/11	118,371
1892	64,225	47/6	47/6	"	45/-	144,506
1893	48,883	55/-	47/6	"	50/6	123,429
1894	56,050	55/-	55/-	"	52/3	146,430
1895	69,174	47/6	47/6	"	45/-	155,642
1896	72,746	55/-	47/6	"	45/11	167,012
1897	60,499	55/-	55/-	"	52/3	158,053

\* These are known as "local" rates, and must be distinguished from "through" rates, as charged to India. In the case of local rates the shipper has to pay all items of carriage, cartage, etc., as set forth in the note to Table I., amounting to 9/8 per ton weight. The rates given above are for Heavy Goods, which constitute the bulk of the shipments; that is to say, they weigh over 12 cwt. to the cubic ton of 40 feet. The rate for Light Goods, which must come under 12 cwt. for the ton measurement, is usually 15s. per ton less. The present rates are 55s. "heavy" and 40s. "light," with primage.

TABLE XII.—JAPAN.  
*Freights on Cotton Goods and Yarns for the last Ten Years.*

Year.		Total Tonnage as per Table X.	Rates of Freight on Heavy Goods and Yarns from Liverpool and Returns.*			Nett. Average Rate of Freight.	Amount of Freight.	Total.
			Highest Plus pri	Lowest mage, 5%	Returns			
							£	£
1888	Goods	9,678	57/6	22/6	10%	32/8	15,807	39,513
	Yarn	15,982	52/6	20/-	"	29/8	23,706	
1889	Goods	10,286	35/-	25/-	"	28/5	14,614	32,634
	Yarn	15,784	27/6	15/-	"	22/10	18,020	
1890	Goods	7,915	42/6	37/6	"	37/-	14,642	33,496
	Yarn	13,589	37/6	20/-	"	27/9	18,854	
1891	Goods	7,427	42/6	42/6	"	40/4	14,977	29,477
	Yarn	8,722	35/-	35/-	"	33/3	14,500	
1892	Goods	9,318	47/6	47/6	"	45/-	20,965	44,350
	Yarn	13,756	40/-	27/6	"	34/-	23,385	
1893	Goods	8,728	55/-	55/-	"	52/3	22,801	43,995
	Yarn	11,155	40/-	40/-	"	38/-	21,194	
1894	Goods	8,846	55/-	55/-	"	52/3	23,110	39,470
	Yarn	8,611	40/-	40/-	"	38/-	16,360	
1895	Goods	11,729	55/-	47/6	"	48/9	28,589	50,896
	Yarn	12,509	40/-	35/-	"	35/8	22,307	
1896	Goods	13,650	47/6	47/6	"	45/-	30,712	52,948
	Yarn	13,375	35/-	35/-	"	33/3	22,236	
1897	Goods	11,691	55/-	55/-	"	52/3	30,542	56,406
	Yarn	13,613	40/-	40/-	"	38/-	25,864	

\* These are all "Local" Rates, see note to foregoing table.



From the figures already quoted we are able to summarise as follows:—

Approximate freight on cotton goods for 1897 to the following markets.

Bombay .....	62,411 tons as per Table III.	£70,342
Calcutta, Madras, & Burmah	116,829     "     "     V.	£175,243
Straits Settlements .....	14,367     "     "     VI.	£175,938
China and Hong Kong ...	60,499     "     "     VIII.	£158,053
Japan .....	25,304     "     "     IX.	£56,406
		<u>£486,982</u>

This freight bill of nearly half-a-million sterling is an indication of the magnitude of our cotton exports to only a limited number of markets, and it is not surprising that steamship companies have exerted all their energies and powers of organisation to obtain, as they have done, complete control of the traffic.

We have still to examine the rates of freight on Manchester cottons to China and Japan as compared with those on similar goods from the Continent and America. It is the enormous advantage enjoyed by foreign producers, in the matter of freight to these Far Eastern ports, which has given point to the agitation for the extermination of Shipping Rings. Particular cases have been cited again and again in proof of the complaint, but if we take the traffic in bulk, the onerous conditions imposed upon shippers will be seen in a stronger light.

#### COTTON GOODS TO CHINA AND JAPAN FOR 1897.

Freight from Liverpool on 85,803 tons at 52s. 3d. for goods and 38s. for yarns ..... = £214,461

The same tonnage if shipped from Hamburg would have cost 25s. per ton..... = £107,253

The same tonnage if shipped from New York would have cost 25s. per ton ..... = £107,253

If the steaming distances are taken into account the discrepancy becomes still more striking.

TABLE XIII.

*Steaming Distances and Rates of Freight on Cottons from Liverpool, Hamburg, and New York to various Ports named.*

Name of Market.	From Liverpool.		From Hamburg.		From New York.	
	Steaming Distance. Miles.	Nett Freight after deducting Carriage, &c., and all Rebates.	Steaming Distance. Miles.	Nett Freight.	Steaming Distance. Miles.	Nett Freight.
Hong Kong...	9,799	52/3	10,281	25/-	12,847	25/-
Shanghai.....	10,669	52/3	11,151	25/-	13,717	25/-
Yokohama ...	11,601	52/3	12,083	25/-	14,649	25/-



It must not be supposed that this is an impossible or fictitious comparison. The figures show indisputably that if our cotton manufacturers had their mills in Germany or the United States they would effect a *saving* in freight, to these markets alone, of approximately £107,000 per annum.

That the question is of paramount importance to manufacturers need not be insisted upon, except to say that if shippers pay more freight than by wise foresight and judicious management would be necessary, the result of such neglect more seriously affects manufacturers than any other party to the transaction. It would be easy to bring evidence to prove that our business with China, in certain makes of cloth on which the item of freight is particularly heavy, has been suspended for a time because competing cloths made in America were carried at such low rates that the Lancashire article was beaten out of the market.

It has often happened that English companies competing with American lines obtained a share of this traffic, and coming, as it did, *via* Liverpool, Manchester shippers had the satisfaction of seeing their business destroyed by Conference liners bringing these foreign goods more than 3,000 miles, almost to the doors of Lancashire mills; then taking them in the same steamers to China at less than half the rates charged for our home manufactures.

It cannot be said that this was done with the deliberate intention of injuring or annoying our traders. The simple explanation is that other competing influences being at work, it was not possible for English companies to obtain higher freights; but the result of these preferential rates was none the less disastrous to Manchester shippers, and, in turn, to Lancashire producers.

Moreover, the rates quoted above are not exceptional. Opportunities of shipping at lower figures often occur, and the sailings from Hamburg are becoming increasingly frequent, while the latest advices from America show that one, two, and sometimes three steamers sail every week from New York to these Far Eastern ports. Goods are constantly sent from here by steamer to Hamburg for shipment to China and Japan, and so keen were the Continental shipowners to secure a share of this traffic that a sort of offensive and defensive alliance has been made with them by the English Conference, to the effect that if the preserves of the latter are poached upon to the extent of more than a certain number of tons per annum, then the English steamers have the right to invade Continental ports, and, by cutting rates, would, no doubt, secure the traffic.

#### SUBSIDIES.

It has been contended that the heavy subsidies granted to Foreign Shipping Companies enable them to charge the low rates referred to. Our strongest competitor in this respect is Germany, whose determination to encourage the formation of a mercantile marine is being gradually realised. But what does an examination of the circumstances show?

Germany has just granted a new postal subsidy of £279,500 per annum for a fortnightly service to Colombo, Singapore, Hong Kong, Shanghai, Yokohama, and a monthly branch to Australia.



England grants a subsidy of £330,000 to the Peninsular and Oriental Company, and £85,000 to the Orient Steam Navigation Company, or £415,000 in all per annum for a weekly mail service to Bombay, Colombo, Penang, Singapore, Hong Kong, Shanghai, and Australia.

It would almost appear that the English companies are in a better position to grant relief in rates of freight, if they were so disposed, than their German competitors; but taking into account the obligations incurred by these Mail Contracts, it does not appear that the difference in freights referred to is explained by the subsidies received; but the Blue Book issued by our Government last July is a storehouse of valuable information for all who wish to go thoroughly into this question.

#### GENERAL CONCLUSIONS.

There are those who say that Shipping Combinations are tyrannical; that their actions are in restraint of trade, and therefore illegal. To be compelled to submit to onerous terms without consultation or discussion, undoubtedly savours of tyranny; but as to illegality, the matter has already been fought out in the Law Courts.

The action was brought by the owners of the "Mogul" Line, who contended that defendants, the Conference Liners, had—

"Compassed an indictable conspiracy in restraint of trade and against public policy, *to keep up freights.*"

The case was taken to the House of Lords, with the result that "plaintiff's statement of claim disclosed no cause of action." It could hardly have been otherwise, even with shippers as plaintiffs, for similar restraints of trade are not uncommon in almost every branch of industry.

There is nothing illegal in combining to protect interests and fix prices, and if *Shipping* Combinations had been met by a controlling and counteracting influence, such as *Shippers'* Combinations would have exerted, shipowners could hardly have pressed their demands to the extremes complained of.

The greatest work on Economic Science teaches that when producers, distributors, and consumers follow their own interests they unintentionally promote the interests of each other. But if the interests of one class are neglected, the balance becomes disturbed, and sooner or later the community suffers.

This is precisely what has happened in the case under consideration. So long as there was free and open competition in freights, shippers had little cause for complaint. On the other hand, shipowners found that their interests in many ways required safeguarding, and so, Shipping Rings were evolved by what may be termed the exigencies of trade. The object aimed at was achieved, but with the silencing of all opposition, shipowners had gradually tightened the fetters of that cunningly-devised rebate system, until now the shipper, finding himself completely in the power of his adversary, is murmuring more or less helplessly at his fate.

Still, if you inquire, the shipowner will tell you that, strictly speaking, there is no Conference or Ring for fixing rates, only an

arrangement or understanding exists to charge a certain minimum. The rest is all done by the shippers themselves, who simply walk into the trap so warily laid.

It is hardly necessary to bring further evidence. The facts and figures adduced show what effect Shipping Rings have had upon our cotton trade with the East, and it must not be supposed that their baneful influence is confined to these markets. A similar story can be told in connection with our exports to almost every quarter of the globe, and it has more than once happened that when attempts have been made to break through the combinations, shippers have had their goods boycotted by Conference steamers, or extortionate rates of freights have been demanded.

In view of all the circumstances it is strange that the agitation against Shipping Rings is neither widespread nor very organised in its character.

Mr. H. H. Clark, Chairman of the South African Mercantile Association, has diligently drawn public attention to the subject for some year past. He does not confine his appeals to the traders immediately concerned, but asks for help from commercial classes generally.

The question has also been taken up on behalf of manufacturers by the Associated Chambers of Commerce. At their recent gathering Mr. Hibbert, Vice-President of the Blackburn Chamber, succeeded in passing a resolution condemning preferential rates, protesting that no shipping company granting them should receive a subsidy, and asking the Board of Trade to initiate such legislation as may be necessary.

It is not likely that an appeal to Parliament to redress grievances of this kind would prove successful. Nor is it probable that the authorities would agree to insert a clause in our mail contracts, tying the hands of steamship companies in the matter of freights. What, then, is to be done? To suggest a remedy amounts almost to a reflection on those who conduct the largest branch of our export trade.

If shippers had not hitherto taken united action, are we to conclude that the evil is not regarded seriously? By no means.

British traders are long-suffering to the last degree. They are accustomed to submit with stoical composure to inequalities of treatment, if not injustice. A time comes, however, when patience is exhausted, and with surprising rapidity unity of action is developed and the evil swept away.

The chief difficulties may be stated under three heads:—

1st. Shippers are under the thralldom of the rebate system, and sums amounting to hundreds and thousands of pounds would have to be sacrificed if they failed to comply with the terms laid down by the Conference lines.

2nd. Many shipping firms, and especially the larger ones, represent the different steamship companies in foreign ports, and are quiescent from interested motives.

3rd. The greatest difficulty is to be found in the objection which shippers generally have to take common or united action on any matter affecting their interests. This, in turn, is explained by the almost fierce spirit of independence which has always characterised Manchester shippers as a body, and which in the past has produced satisfactory results. It has already been described by the word "individualism,"

and is sometimes mistaken for jealousy by those not conversant with the facts.

The history of industrialism furnishes numerous examples where, under certain conditions, individualism has proved to be admirable; but it is folly to adhere to it as a working principle under all circumstances. Combinations are the order of the day, and shipowners have simply followed the law of self-preservation in resorting to the protection which they afford. It is futile to attack them, unless similar methods are adopted. No originality, therefore, is claimed for the suggestion that a Shippers' Federation should be formed. The idea has already been in operation for years, and has worked satisfactorily in connection with Bombay Freight Contracts.

To commence with, the members might find it sufficient to authorise a Central Committee to receive on their behalf all rebates and returns. If this appears to be a small matter, and out of proportion to the trouble involved, let it not be forgotten that in the first instance the great difficulty is to find an object on which shippers can unite, with the least possible sacrifice.

It is not necessary that the organisation should be large to commence with. It need only have the smallest beginnings, and as a knowledge of the advantages became general, it might be possible to look forward to the formation of an effective combination, made up of Sectional Committees, corresponding to the various Shipping Conferences and empowered to deal with all questions affecting freights to different ports.

The expense of such an organisation should not be great, and would be amply compensated for if reductions in rates were secured. Manchester has spent fifteen millions sterling on her Ship Canal, with the object, amongst others, of overcoming a railway monopoly which insisted upon charging 10s. per ton. So far as our exports of cotton goods to every market in the world are concerned, Bombay alone excepted, the fruits of this enormous sacrifice are practically wasted by the action of Shipping Rings in preventing steamers from making use of our water-way and not allowing shippers to effect the saving which would thus be possible.

We have seen how completely the Bombay natives succeeded in defeating the shipowners' combinations, but the suggestion that the same tactics should be adopted in other markets is met by the objection that conditions elsewhere are entirely different. Traders in other ports, it is said, have not the intelligence or capacity to do what was done by Bombay. If they had, it would be a serious matter for Manchester. Surely it is not necessary to repeat the warning that these are the objections which in 1881 disarmed both shippers and shipowners on this side. A saving of 20s. per ton appeals to the intelligence of the humblest trader in all markets. Once show him how it can be accomplished, and unity of action makes it possible.



## REPORT ON THE TEACHING OF APPLIED GEOGRAPHY.

PREPARED AT THE REQUEST OF THE COUNCIL OF THE MANCHESTER GEOGRAPHICAL SOCIETY.

By DR. A. J. HERBERTSON, F.R.S.E., F.R.G.S., Lecturer on Industrial and Commercial Geography, Heriot-Watt College, Edinburgh.

[Read to the Society, in the Library, Tuesday, January 31st, 1899.]

### INTRODUCTORY.

JUST as geography may be defined as a special way of looking at the greater organisms that make up the world—its mountain and river systems, its plant and animal associations, its races of men and their organisations—so applied geography may be defined as a special way of looking at geography, a limitation and a specialisation of the study of it from one point of view. For the business man this point of view is an economic one, for the medical man a climatic and demographic one, for the missionary an ethnic and ethical one.

There is one aspect of applied geography which is not dealt with at all in this report—the educational one. The educational aspect has been too much neglected both by schoolmasters and by geographers. It is not sufficiently realised that all departments of geography should not necessarily be taught in school, but that a good teacher must make a selection. The limitations he will put on geography will vary with the locality wherein he lives, and the future work of the pupils he teaches. The choice of the most educative elements of geography is a difficult one, and requires considerable knowledge and great judgment. In a previous report on Geography in Education the very pressing need for the adequate training of teachers of geography has been urged, and this phase of applied geography may be left with these remarks.<sup>1</sup>

The applications of geography to military, medical, and missionary purposes can be very briefly dealt with, as, at present, the subject is practically not included in the curricula of most colleges and schools training for these professions.

In addition to the very elementary geography required for entrance to the military school, geography is studied in connection with history, and military topography is another subject taught.

The following letter from one of the leading Missionary Societies summarises the customs of most:—

“In reply to your questions concerning the instruction of Missionaries in Geography, I am afraid that I have not much information to give.

<sup>1</sup> “The Position of Geography in the Educational System of the Country.”—*British Association Report, 1897*, pp. 370-409.



"(1) Our Committee have not thought it necessary to require any more special knowledge of geography from missionary candidates than is represented by an ordinary English education.

"(2) Owing to the extent of the Society's operations, and to the impossibility of foreseeing special vacancies in the Mission field, we are not able, as a rule, to assign candidates to any particular Mission until near the time for them to sail, and hence we cannot do much in the way of giving instruction to individual new missionaries concerning the special Geography of the country to which they go. As soon as we do know to what particular Mission a particular candidate is going, we do what we can to help him to obtain, before he sails, such knowledge of the country as is likely to be of use to him. This would have more to do with the people and their history, customs, and religions, than with the physical features and productions of the country; and we seek to do this by lending him books, and by putting him in touch with retired Missionaries or those at home on furlough.

"I ought, perhaps, to add that our medical advisers make a special study of the climates of the different countries to which our Missionaries are sent in order to be able to advise us as to the suitability of individual candidates for this or that field, and that we, of course, also keep ourselves informed as to the kind of food to be obtained in any country, so as to be able to advise recruits what supplies to take with them. Beyond this we do not make any special study of the products of the different countries, as our Missions are not in any sense commercial."

It would certainly add to the admirable work already done by so many Missionaries, both as Missionaries and Geographers, if a more careful training, more particularly in human geography, could be given to them than the slight elementary knowledge they gain at school, and the special information they obtain from experts and standard works in the hurried weeks immediately before their departure for the Mission field.

A certain amount of Geography is no doubt taught in the Public Health Departments of the leading medical schools, but as far as can be learned no systematic study of medical climatology or demography is given in any of our medical schools.

At the present time the idea of applied geography is perhaps limited in most minds to that of economic geography, or even to purely commercial geography. There are many reasons for this, the pressing practical need for the recognition of this aspect of geography being the most important. Technical education has recently been organised throughout the country, and may be said to be developing in a satisfactory way. Having turned our attention to the practical scientific study of production, we must now do the same for distribution. The school for the practical scientific study of the means of distribution—the commercial college—has not yet had the attention paid to it that it ought to have and that it will have. In such a college the commercial side of geography should have a very important place. Commercial geography is the study of the alteration of existing distributions of commodities, and of the means by which these changes are effected. It corresponds to the study of circulation in the human

subject. It is not a statical, morphological study of a dead world, but a dynamic, physiological study of a living one. Hence it is at once a most attractive and a most difficult subject—one requiring careful preparation of the pupil and still more careful and thorough training, combined with a wide experience of the world, of men and of their economic activities, on the part of the teacher.

It is to this aspect of applied geography that this report is almost exclusively confined, and it contains a summary of the results of an inquiry into the existing state of affairs in this and other countries, such as can be gained from correspondence and perusal of documents, a selection of which is given in an appendix.

#### THE PRESENT POSITION OF ECONOMIC GEOGRAPHY IN OUR EDUCATIONAL SYSTEM.

To ascertain the present position economic geography holds in our educational system many teachers of commercial geography were approached in person or by letter, and a correspondence was entered into with the managers or directors of technical and commercial colleges and others interested in the subject. In addition, a circular letter was sent out by the Society to all the chambers of commerce in this country, asking for information about the teaching of commercial geography in their district, and what steps, if any, each chamber had taken to promote its study. Answers were received to this letter from 31 chambers, and in a number of cases led to a correspondence with other local authorities.

A large number of the chambers of commerce replying, while stating that they had done nothing directly to found courses in commercial geography, expressed sympathy with the idea of having them, and some urged the great need there was for them. One secretary in the north of England wrote: "Boys leaving *any kind* of school in this country are not acquainted with an elementary knowledge as to the location of the chief towns of their own and other countries. I have known an *intelligent* boy state Rotterdam was in Belgium and ask if a letter to Pontypridd required a foreign stamp."

The following letters are typical of another set of answers:—

"In reply to your inquiry respecting the teaching of commercial geography in this district, I regret to say that we as a Chamber consider that instruction in this important matter does not receive the attention it deserves.

"Outside the ordinary school curriculum, there are few opportunities for its study, and a special Committee of the Chamber is now engaged in striving to find the means for encouraging an interest in this and kindred subjects."

"The Chamber is not making any special efforts to promote the teaching of commercial geography, although we have been endeavouring for some years to give special prominence to commercial education generally, but owing to the lack of co-operation of the educational authorities we have been unable to effect our purpose at present.

"I have made inquiries of the scholastic authorities in the neighbourhood, and am informed that all the teaching in the higher grade schools on this subject is in this direction, the masters giving prominence

in their lessons to matters connected with the productions, industries, and trades of various countries."

One chamber, which reports that commercial geography is taught in secondary schools, adds: "An evening class was opened some years ago in commercial geography, but the attendance was so very small that the governors were obliged to close it."

A number of chambers try to promote the teaching of commercial geography by giving certificates and prizes on the results of examinations on the subject, and the London Chamber has organised special commercial examinations (see later). Some chambers have succeeded in getting commercial geography made a course in the local technical school, and others are making arrangements for such a step next session. Some chambers have a list of firms giving preference to candidates for situations who possess a commercial certificate, but in a few cases commercial geography has no place among the subjects necessary for this certificate.

The agencies at present engaged in directly spreading a knowledge of commercial geography are: Secondary Schools, some of which have special classes in the subject for advanced pupils; Evening Continuation Schools; Technical and Commercial Schools and Colleges; the University Colleges and the University Extension Societies; and the Geographical Societies.

It is not possible to discover how many *Secondary Schools* have special classes for commercial geography; those which do, usually prepare their pupils for examination in the subject by one or other of the authorities noted below. It is a debated subject whether commercial geography should be taught as a special subject in our secondary schools, and the writer of this report, while admitting it may be desirable in special circumstances, is strongly of opinion that as a rule it ought not to be attempted, and that the time would be much better spent in giving pupils the thorough grounding in the facts and principles of geography, which they so rarely get at present. No good teacher of geography, however, will ever omit to point out to pupils who can appreciate the points, the economic applications of the geography lesson.

For the *Continuation Schools* a very satisfactory syllabus has been prepared by the Education Department for the guidance of teachers, and it has the great advantage of being a syllabus the teacher is not bound to follow, but one which he can modify to suit local needs. (See Appendix A.) The number of continuation schools teaching commercial geography in England and Wales in 1897-8 was 495, and payment was claimed for 12,460 pupils.

In Scotland in 1897-8 geography was taught to 18,191 pupils in 237 departments of Continuation Schools.

Many of our *Technical Colleges* have a commercial department, and in most of them which have this department commercial geography is taught. The syllabuses vary very much, depending partly on local conditions, partly on different conceptions of the content of commercial geography. In some cases the syllabus is peculiar to the institution, in others it is that of one of the chief examining bodies. (See Appendices B—E\*).



Special attention must be called to the efforts to promote sound teaching of commercial geography in the West Riding of Yorkshire. The County Council have arranged for a special set of Saturday lectures on commercial geography for teachers. These are given by Mr. E. R. Wethey, M.A., F.R.G.S., whose syllabus is appended. Appendix E.). A special set of slides is prepared for each lecture. The lectures have been very successful, and the Secretary of the Heckmondwike Chamber of Commerce reports: "Commercial Geography is taught here at the higher schools both in day and evening classes. The school teachers attend the County Council classes at Leeds on Saturdays and reproduce the lectures here with the use of the lantern slides."

The training of commercial geography teachers is of the utmost importance, and it is satisfactory to be able to report that it has been undertaken in several other centres, making use of the University Extension organisation.

During the winter of 1898-99 *University Extension* courses in economic geography were given in different parts of England, but mainly in London, and are well attended. The examinations have not yet been held, but last year the results in cases coming under the writer's personal observation were very satisfactory. (The syllabus of Mr. Chisholm's course is given in Appendix F.).

In 1898-99 four courses, each of 25 lectures, dealing with different branches of economic geography, attended by 358 pupils, were given in connection with the London University Extension Society, one of the courses with the co-operation of the London School Board. Other courses in geography were given by University Extension lecturers of Oxford (2), Cambridge (3), London (3), and Victoria (1), which had only an indirect connection with economic geography or none at all.

Hitherto the *Universities* have paid no attention to economic geography as a special subject for students of geography or of economics. This winter Liverpool University College, in conjunction with the Chamber of Commerce and the Technical Instruction Committee of the County Council, founded a School of Commerce. Commercial geography is one of the subjects. The School of Commerce is, however, at present only an evening one, and corresponds to that of Nottingham University College and to the technical evening colleges elsewhere, and not to the Faculty of Commerce that now exists in several foreign Universities. The importance of such a Faculty of Commerce has been ably urged by Mr. Chamberlain for Birmingham, and should become part of the Universities in all our large cities.

One institution in this country, however, can be compared with some of the best foreign ones—the London School of Economics, where lectures are given in economic geography.

So far as the writer can learn, the University Extension Lectures, those in Leeds to West Riding teachers, and those in the London School of Economics are the only means of gaining instruction in aught but the rudiments of economic geography at present available in this country.

The various *Geographical Societies*, by their lectures and journals, do much to promote an extension of our knowledge of commercial geography, and none more than the Manchester Society. The museum proposed by the Society will prove of great service to those who have



access to it; and it is an essential part of the new scheme that arrangements be made for lending small sample collections of economic interest to the schools and colleges which affiliate themselves with the Society. This will facilitate the carrying out of one of the recommendations of the Education Department in the north of England. (See Appendix A.) The unique work of the "Victorian" lecturers of the Manchester Geographical Society must be mentioned in this report. In 1898-99 many lecturers dealt with various parts of the British Empire and other lands, from an economic as well as a geographic point of view.

Several organisations exist for *examining* the pupils trained in commercial geography. Commercial geography is not a subject necessary for the College of Preceptors' commercial certificate, but it is part of commercial English for the Intermediate Education Board for Ireland, and commercial history and geography form one compulsory subject for the commercial certificate of the Local Examinations of Edinburgh University. In England several bodies are specially concerned with the examination of students of commercial geography—the London Chamber of Commerce (examinations in London, Southampton, and Jersey); the Society of Arts (Birmingham and elsewhere); the Union of Lancashire and Cheshire Institutes, and several County Councils, which give commercial scholarships and exhibitions and conduct special examinations for candidates, like the Lancashire County Council. (The syllabuses will be found in Appendices G—I.).

What is needed at the present time in this country seems to the writer to be:—

(1) A clearer idea of what should be taught as economic geography; for the impression his experience leaves is that far too many of the faults of the old methods of teaching geography are still retained. Wearisome and useless lists of capes, islands, rivers, and mountains may not be given, but they are too often replaced by equally objectionable lists of exports and imports.

(2) Means for training teachers of geography and business men who wish to learn more than the most elementary facts and desire to become experts. The Universities and University Colleges are the bodies on which the duty of doing this should fall.

(3) At the same time an expansion of University Extension Lectures and the formation of advanced classes in the subject in our technical and commercial colleges is much needed. The writer's experience is that the first year at a commercial geography class only suffices to prepare a pupil to begin a thorough study of the subject, and that much good work is lost both to pupil and teacher through there being no opportunity for continuing the work together.

#### ECONOMIC GEOGRAPHY IN FOREIGN EDUCATIONAL SYSTEMS.

Without personal inspection of the different kinds of commercial schools and colleges at home and abroad it is very difficult to form a very decided opinion on the question whether other countries are more advanced than our own in the teaching of economic geography. In all countries special attention is now being directed to commercial education, and every year new schools are being started, and the

scope of those already existing greatly enlarged. Probably the facilities at present available for learning elementary commercial geography are almost as good in this as in other countries; but the British teacher labours under the disadvantage that his pupils are not so well prepared to profit by his teaching as those of Continental countries such as France, Switzerland, and Germany; and he himself cannot find the means of obtaining a geographical training such as most foreign teachers possess.

There can be no hesitation, however, in pointing out that greater facilities for higher training in economic geography exist in some foreign countries than at home, and it is necessary to emphasise the need for adequate provision of higher economic education in this country.

A summary of the information received from various foreign correspondents is given here, and extracts from some of the syllabuses sent are printed in the appendix.

*France.*—The Director of Secondary Education in France has kindly drawn up the following most valuable statement on the position of economic geography and the history of commerce in the commercial schools of France:—

"The teaching of Geography and the History of Commerce has an important place in the syllabuses of the higher Commercial Schools and the Commercial Colleges of France. The final examinations of these institutions give the successful pupils a coveted dispensation in the matter of military service, and this attests their importance.

"In the Commercial Schools, as in the Lycées, the study of Economic Geography is based on an exact knowledge of the physical structure and the political conditions of a country. The French programmes have never encouraged the introduction into the lessons of lists of agricultural products, of manufactured articles, of means of communication and of commercial statistics under the pretext of adapting geography to the needs of practical education. It is made a means of giving the pupils a true education, that is to say, of developing their powers of reasoning and of initiative. For this purpose the section of physical geography is in no ways limited. The masters, however, are recommended to avoid the faults of useless erudition, and to adapt the physical geography to the end in view. For instance, if they have to touch on the domain of geology, it ought to be to furnish general notions about the composition of the most fertile soils, and to indicate the distribution and the importance of the common minerals. In studying climates they ought to teach what is of importance for agriculture, and how climate affects ocean navigation. In describing the mountains they ought to insist upon the distribution of valleys, passes, and slopes. In dealing with rivers they ought to show how their length, depth, and variations make them suitable for navigation. The same precautions are enjoined in studying the conditions of animal and vegetable life.

"This essential discipline is easier in our Commercial High Schools owing to the custom of associating history and geography in education. It appears to our educational authorities, or at least to the greater number of them, that a real adaptation of the geographical studies, such as their limitation to the social facts of the diffusion of wealth,

has its foundation in the historical method. Our pupils seem to be trained by this discipline to direct their interests towards the ideas which explain the relationship of the human societies to the regions in which they are settled, or are commencing to be settled, by commerce and by colonisation. We have tried to orient our commercial education like our classical education, by the philosophy which is necessary to it. Hence it is that the History of Commerce is a subject intimately allied in its educative work with the study of History properly so called, and of Geography. Formerly the History of Commerce was confined to an account of the mere general facts of exchange, and an explanation of economic doctrines; now our instruction in the History of Commerce tends to become explanatory and evolutionary. The descriptive lessons are always combined with an examination of the geographical conditions of each people and of each epoch. In short, the programmes of History, Commercial or other, and of Geography are harmoniously and strictly bound together. At any rate we attempted by the formal instruction and by the tendency given to the final examinations to arrive at this result.

"It is probable that an approaching modification of the entrance examination to the Higher Commercial Schools will give a powerful and efficacious sanction to the reforms of which we have just sketched the spirit. At present the entrance examinations are entirely oral as far as regards Geography. In future a written examination in the form of questions, of problems, and of a dissertation will be compulsory. Consequently the candidates will hereafter be trained, not merely in an exact knowledge of descriptive geography, but also to co-ordinate their information, and to deduce well-reasoned conclusions. Alongside the course in theory there will be a course in applications. The power of judgment will be developed, and that of pure memory minimised. We consider that geographical education will not bear fruits except under such conditions.

"In the examination for our *professorat commercial* there will be the same endeavour to associate the geographical teaching with the greatest possible number of other studies. In the higher examinations geography is not allied to the History of Commerce nor to the Political Economy, which are treated by themselves, for we are guaranteed against an abuse of specialism by the age and maturity of the students. We ask the candidates, however, after a brief preparation, to discuss a question in economic geography in a foreign language. This ingenious examination has given us the greatest satisfaction. Owing to the complex character of this test we are assured that the future professors, sent on a mission to a foreign country, are not merely trained in the current language, but have lived among the people of the country in which they have visited, have heard the discussions in different kinds of societies and have read much. In this respect we are fully satisfied with the results.

"In general outline such are the principles which dominate our teaching of Economic Geography. They are of the same nature as those which inspire all our secondary education."

Economic Geography has an important place in the curriculum of the L'Ecole des Hautes Etudes Commerciales, which is supported by the Paris Chamber of Commerce. This school prepares students



intended for business or industrial life, for positions in banks or in railways, for the Consular and the Civil Service, and for commercial teaching. The pupils are those who have passed through the Lycée or other secondary schools, and must be over 16 years of age. An entrance examination is required, and a syllabus in geography of this examination is printed in Appendix K. A special preparatory school has been formed for preparation for this examination. The syllabus of economic geography followed in the school is given in Appendix L.

*Belgium.*—Twelve special Commercial Schools exist in Belgium. The most important are those connected with the Universities of Brussels and Liège, and the Higher Institute of Commerce in Antwerp.\*

At these institutions the course extends over two years, but for those entering the Consular Service a third year is required.

The pupils at the Antwerp Higher Institute of Commerce have to pass an entrance examination on the general subjects of instruction in the Athenées Colleges and Gymnasias, and a preparatory course is also given at the institute for this examination, in which physical geography forms a part. A commercial museum, library, and laboratory form part of the institute. The syllabus of geography in the institute is given in Appendix M.

*German Empire.*—The following quotation from an interesting and valuable report on Commercial Education in Germany, by Mr. Consul Powell (Diplomatic and Consular Reports, Miscellaneous Series, No. 483, 1898. Price 2d.), summarises the present condition in Germany:—

“There existed in 1891 in the German Empire, 165 ‘Kaufmännische Fortbildungsschulen,’ of which 65 had been started since 1885. In Prussia there were 77, in the other States, particularly Saxony and Baden, 88, only one of which was founded by the Imperial Government. Town councils founded 23; Chambers of Commerce, 11; merchants’ guilds, 20; and others by associations and private munificence. The State granted a subvention to 54, and town councils to 68.

“The higher order of commercial education is the ‘Handelsschulen,’ sometimes improperly styled ‘Handels-Akademien,’ and are either independent establishments as those of Leipzig, Dresden, Chemnitz, and others, or only special branches attached to the higher public schools, as at Munich, Zittau, Frankfort-on-the-Main, Flensburg, and a few other places.

“The intention of higher class ‘Handelsschulen’ is to benefit those young men who, before entering business, wish to devote a few more years to the further cultivation of higher branches of commercial knowledge, and to perfecting themselves in modern languages. On the other hand, the ‘Handelsschulen,’ which are based upon or joined to the national school or middle school system, teach German, foreign languages (always English and French, oftentimes Italian and Spanish), history, geography, mathematics, natural science, drawing, commercial history, banking, exchange, and commercial law (Wechsel und Handelsrecht), book-keeping, political economy, Waarenkunde (knowledge of merchandise), and technology.”

“It is now stated that the Prussian Government are next Session going to introduce a Bill into the Landtag to provide a considerable sum of money for the support of commercial education, not only with reference to the education of clerks, but also as a new department in University Extension, and it has been deemed advisable to imitate the example of Leipzig with its

\* See “Higher Commercial Education in Belgium,” No. 477, and “Commercial Education in Belgium,” No. 491, Diplomatic and Consular Reports. Miscellaneous series.

recently-opened 'Handels-Hochschule,'\* and to attach to a number of Universities a special branch for the teaching of commercial knowledge in its more advanced and scientific regions, similar to the technical high schools at Karlsruhe and Darmstadt which, so far as I am able to ascertain, were the first to adopt the Leipzig method.

"At Aix-la-Chapelle, Berlin, Hanover, and other places possessing technical high schools, special departments for commercial instruction are to be added, the efficiency and success of which can hardly be doubted. In short, the great interest in commercial education which has now been aroused in the various governments of Germany is sure to produce very considerable results before long."

Dr. Sigismond Günther, Professor of Geography in the Polytechnicum at München, has sent an account, of which the following is a summary:—

"Our school gives a complete course in economic geography (*Handels und Wirtschaftsgeographie*) every year, two hours per week being devoted to it. In winter extra-European countries, and in summer Europe, are dealt with. The course is compulsory for all who aspire to become custom-house officers.

"Except this school there is no other in Bavaria dealing with this subject from an *academic* point of view, but a proposal has been made to organise a course in this branch of applied geography at our industrial metropolis—Nürnberg.

"Except for this there is no advanced instruction in Economic Geography," although it is naturally a subject taught in the elementary commercial school.

In Leipzig the Public Commercial School (*Öffentliche Handelslehranstalt*) is nearly seventy years old, and is now under the charge of the Chamber of Commerce. In the division preparing youths who have finished their school course for business geography is taught two hours a week in each of the three classes.

Dr. Kurt Hassert is giving a course of lectures of three hours per week in the University of Leipzig, and also in the Higher Commercial School (*Handels-Hochschule*) on the Geography of the World, Transport, and Trade.

Dr. T. Delius, Lecturer in English and in Economic Geography in the newly-formed Commercial Department of the Royal Technical High School at Aachen, has kindly supplied the following information:—

"For some time past there has been a movement on foot for a higher commercial education on the plan of our University system, but it has not as yet resulted in the establishment of a new institution. Last year they tried the experiment at Leipzig of admitting young business men to the University lectures on the same footing as the other students, and the experiment seems to be successful.† We are trying here a different arrangement, viz., the addition of a commercial department to the technical one already in existence. There will be lectures in all the principal subjects that interest business men: Political Economy in all its branches, Commercial Law, Commercial Arithmetic, 'Waarenkunde' (knowledge of merchandise), Modern Languages, Commercial Geography, etc., etc., so as to provide for the needs of a higher education for business men.

"For *Wirtschaftsgeographie* only two lectures a week are provided at present, but I hope to obtain more before long. In the winter session I intend to lecture on America, Australia, Africa, and Asia, while my colleague Dr. Lehmann is going to lecture two hours a week next summer on 'Allgemeine Wirtschaftsgeographie' (general economic geography) and Europe. This arrangement will probably be modified at no distant date.

\* See also Mr. Gaskell's Report on the "Commercial High School at Leipzig." Diplomatic and Consular Reports, Miscellaneous Series, No. 468.

† Dr. Hassert lectured on "The Economic Geography of the German Colonies" last year.

but at present the whole thing is still in an embryonic state. The funds for the new department are not provided by the State, but by the Chamber of Commerce and other commercial corporations. We are going to establish a commercial museum in connection with our department. We have funds for 'Waarenkunde' and for a collection of coins—the latter of which is under my charge in the summer session. I lecture on Maass-Munz u. Gewichtskunde. Besides I intend to establish a geographical collection—especially literature—monographs, etc., etc., referring to Wirtschaftsgeographie."

*Holland.*—Mr. W. R. Bisschop, Honorary Secretary of the Netherland Chamber of Commerce in London, has kindly obtained the following information from Mr. J. Yzerman, of Amsterdam, Lecturer in Geography at the Commercial High School at Amsterdam, through the intermediary of Dr. J. H. H. Hülsman, headmaster of the same school:—

"In all Dutch schools the pupils go through an elementary course of geography. There is no special training in commercial geography, except in those schools which are specially devoted to the education of pupils in commercial matters.

"These schools are: (1) The Commercial High School at Amsterdam, where a course of lectures is delivered twice a week, extending over two years. This school is organised by the municipality of Amsterdam.

"*Syllabus.*—The Netherlands, and its colonies and possessions, is the special subject treated in these lectures, but the most important European countries—*e.g.*, England, Germany, France, Belgium—and the most important non-European countries—*e.g.*, the British colonies, Egypt, China, Japan, United States of America—also receive careful attention. The industries, commerce, connections by sea and railway and telegraph, the transport arrangements, the ports and markets of those countries, are studied. The physical condition, climate, the food, etc., is described. Full statistics are given. These are mostly derived from consular reports. The statistics for the Netherlands and its colonies and possessions receive most consideration.

"In former years 'Zehden's Commercial Geography' was used, but, as it gives most particulars about other countries than the Netherlands and very little about the Netherlands, the pupils have had to rely on the lectures delivered by the teacher.

"(2) The private Commercial High School at Amsterdam. We know commercial geography is taught at this school, but we have no particulars of the course of instruction.

"(3) Twentsche Commercial and Industrial School at Enschede. The manufacturing district in Holland, in the province of Overysel, is called Twente; it is the Dutch Lancashire. The curriculum lasts one year. The programme includes the Netherlands, its colonies and possessions, and the countries which have most commerce with it; the highways of the world's commerce are also treated.

"(4) The Commercial Class at Rotterdam. The curriculum lasts a year, two lectures a week. The programme includes the principal countries of Europe. The special subjects are: The centres of industry, the commercial highways by land and water, the condition of the agriculture, and the principal commercial towns. Plants—cotton, flax, poppy, etc.—which have importance in commerce and industry are dealt with, and special attention is given to their cultivation, their peculiarities, their transport, etc. The chief markets for the raw products and for manufactured goods are described.

"In connection with the schools or classes numbered (1) and (4) a public high school exists, where the pupils are more than at the other public high schools in the Netherlands taught with a view to a subsequent special commercial training. The education at those two public high schools lasts three years. Pupils enter generally when they are twelve years of age.

Only pupils who have successfully passed through the three years' curriculum at these public high schools, or their equivalent elsewhere, can follow the whole course of lectures delivered at these commercial high schools. Such training, however, is not necessary for pupils who want only to attend to the lectures on one or two special subjects.

"At the Commercial High School at Amsterdam lectures are delivered like those at Rotterdam with regard to the raw products of industry and



commerce (wares and merchandise). This forms a special subject, and is not treated in connection with commercial geography.

"The above are the chief points of the report which has been sent to me.

"Commercial geography is taught in the Netherlands in the two principal commercial towns, and in the principal seat of industry.

"The idea of the educational system in the Netherlands is that commercial geography can only be taught successfully if the pupil has a sound knowledge of the general geography of the world. It is not taught to children under the age of 15 years, and only to pupils when they have had such an education as will enable them to follow such a subject intelligently. It is only taught to those intending to follow a commercial career.

"Commercial geography is looked upon in the Netherlands as a special subject of teaching. This is why it is taught in a thorough manner. The better the grounding in general education the pupils have, the higher the standard is that the teacher can aim at."

*United States of America.*—The University of California has founded a College of Commerce of full academic rank. Professor George Davidson, who has been over 50 years in the United States Coast and Geodetic Survey, and whose travels are counted by hundreds of thousands of miles, has been appointed to the Geography chair. His course this winter deals with the Pacific; its currents and winds and highways of commerce, and countries bordering the Pacific, the nature of these countries and of their peoples, their various products and manufactured articles, their inland transportation, and their relation to the great highways of commerce. A commercial museum is attached to the College.

The University of Chicago has also founded a College of Economics and Politics; but as yet no provision has been made for the teaching of geography.

The Economic Schools of several other American Universities are very important, but except for lectures upon transport, usually associated with transport law, geography is not a subject dealt with in them.

The Commercial Museum in Philadelphia deserves special mention, although it does not as yet have any systematic courses of instruction in connection with it. Some of its monographs on economic geography are such as should be prepared in the economic section of the geographical department in a modern University. Some of the specimens of its great collection are arranged geographically, and the museum ought to be a great centre for teaching economic geography. Commercial museums should form part of the necessary equipment of every geographical department, although not necessarily on the elaborate scale of the great one in Philadelphia.

#### CONCLUSIONS.

1. That there is a growing realisation of the importance of commercial geography in all commercial countries. In many centres of our own country, more particularly in the industrial regions of England, much has been done in the way of forming classes on the subject in the evening schools, that it is coming to have a more important place in the evening continuation schools everywhere.

2. On the other hand, there is no consensus of opinion as to what commercial geography is, or what should be the successive stages in which it is taught. The diversity of syllabus, however, is a good feature, for every region has its own particular economic conditions, which should largely determine the details of the syllabus.

3. One difficulty most teachers of commercial geography in Britain have to contend with is the lack of geographical training in their pupils, and much time has to be spent in teaching them what they should have learned at school. The syllabus of the entrance examination of the *École des hautes études commerciales* in Paris (Appendix K) is an example of the knowledge required abroad before a pupil is admitted into an advanced commercial school. The need for improving the quantity and the quality

of the teaching of geography in our schools, where it is so often neglected, is a very pressing one, and must be attended to if the special training of the evening and day commercial schools and colleges is to be of much value. A thorough and sound commercial education can only be based on a thorough and sound general education.

4. Another difficulty is that teachers have to teach themselves, and at present hardly anything is done to help them to do this. More advanced teaching in economic geography is even more necessary than an extension of elementary teaching. At present practically no provision is made to systematically give advanced instruction in economic geography, and this is not likely to be done until the matter is seriously taken up by the Universities. The directors of industry and commerce need this systematic training even more than their subordinates, and it is of vital importance that the Universities and the more advanced Technical Colleges should see to the adequate provision of the means of teaching this subject, as the Germans and Americans are beginning to do.

It would seem, therefore, that the continental nations are ahead of us in the more thorough training given in geography in schools, that, like ourselves, they have become thoroughly alive to the importance of a sound special training for young business men after their school years, for which they are now making provision, and in the matter of advanced economic training they have moved ahead of us.

Some of the writer's views about the economic section of a geographical department are outlined in the accompanying paper. In conclusion, he has to thank the numerous correspondents who have so readily answered his many questions, and, above all, the Manchester Geographical Society and its energetic Secretary for the opportunity of making this survey of the present position of the teaching of economic geography.

---

## APPENDICES.

---

### APPENDIX A.

#### SYLLABUS OF EVENING CONTINUATION SCHOOL CODE IN COMMERCIAL GEOGRAPHY, ENGLAND AND WALES, 1898.

A good grounding in the physical features of the Earth's crust, the variations in climate, and in animal and vegetable life should have been received before a scholar enters upon the study of Commercial Geography, which deals with the geographical distribution of commercial commodities, chiefly food, with raw and manufactured products and minerals, and with various facilities and hindrances to trade.

The full course is divided into three stages, as follows:—

*Elementary Stage.*—The British Isles, means of communication and transit by land and by water, the trade routes and facilities for communication with all the more important countries of the world.

*Intermediate Stage.*—One British colony, India, and one foreign country; the commercial relations of each with Great Britain and with other countries as affecting the interests of Great Britain.

*Advanced Stage.*—Some one branch of British trade to be thoroughly studied, commencing with the cultivation or production of the raw material, its distribution and conveyance, manufacture, markets for finished products, duties and tariffs (if any), competition of other countries.

It is suggested that each country should be dealt with on lines similar to the following:—

(1) Position, configuration, and climate, and their influences on the prosperity of the country—(2) Raw productions: (a) Mineral, (b), Vegetable, (c) Animal: How and where found, how rendered of commercial value, for what used, and price (fluctuant or otherwise)—(3) Manufactures and markets therefor—(4) Means of transport and communication (natural and artificial)—(5) Exports: Natural or artificial (tariffs) restrictions to the development of trade—(6) Imports: Natural or artificial (tariffs) restrictions to the development of trade—(7) Seaports, river ports, and other commercial towns—(8) Trade routes traversed by British ships bearing imports and exports—(9) Foreign competition encountered by British merchants and extent thereof.

The course should embrace the study of the localities where, and the geographical and local conditions under which, the various commodities are produced; the means of transit, and the trade routes available, both for inland and for export, together with the distances and ordinary modes of conveyance to important markets, the quantities available for export, and the actual recent rates of export to various countries; neutral markets and extent of British trade with them; the quantities in demand as imports, and the extent to which this demand is met by various foreign countries; the capacities of countries for commercial development, including both old and new countries; weights and measures, currencies, tariffs, postal and telegraph arrangements, and social and political characteristics likely to affect trade; ports and harbours, lighthouses and lightships, coaling stations. Maps showing the districts producing the more important natural and manufactured commodities should be made use of.

Special maps, showing rivers, canals, railways, cable, steamship, caravan trade routes, and producing districts should be obtained.

It would be helpful if the students were required to draw a series of charts or maps, each of them illustrating some particular characteristic of the country under revision, and on the following lines, showing:—(1) Contour of the land, lines of drainage, and particular localities of the river basins—(2) Distribution of mineral products (details can be obtained and filled in from the text-book)—(3) Distribution of vegetable products—(4) Distribution of industries—(5) Canal, railway routes, and trade lines—(6) Steamship routes to nearest countries and trade centres, etc., until each characteristic has been so exhausted.

In order that the students may see and examine the real objects spoken of, it is recommended that a well-chosen museum for practical teaching be provided; where a commodity is being dealt with, it would be well to show it not only in its natural state, but also in the various stages of manipulation to which it is subjected before the useful article is produced. When the exhibition of the object is only imperfect, pictures of the object, with its native surroundings, should be shown.

## APPENDIX B.

### CITY OF LIVERPOOL SCHOOL OF COMMERCE.

(Mr. Clarence G. Dyall.)

**GEOGRAPHY.—Commercial.**—General survey of the trade of the United Kingdom, with particular reference to Liverpool—The imports and exports of the United Kingdom, and the areas in which the imports are used and the exports manufactured—Causes determining trade and locality of manufacture—Geography of great commercial products: Cotton, wheat, petroleum, timber, tobacco, wool, etc; chief countries of production of these articles and their conditions; chief countries of consumption—Trade rivalry of other countries with the United Kingdom—Great trade routes and lines of communication, with particular reference to the cheap and rapid transport of wheat, cotton, petroleum, etc., from the place of production to that of consumption.



# APPENDIX C.

GLASGOW ATHENÆUM. COMMERCIAL GEOGRAPHY AND HISTORY.

(Mr. George S. Brown, B.Sc., of the Free Church  
Normal School, Glasgow.)

Course of twenty lectures on Monday evenings at eight o'clock.

*Synopsis.*—Introductory: Outline and method of the course—Maps: Methods, purposes, and relative values of the different projections—Physical basis of Commercial Geography: Situation, climate, fauna, flora, minerals—Ethnological basis: Races of mankind, language, religion—Sociological basis: Conditions of labour and trade, regulations for customs and trade—Means of communication: Road, canal, railway, river, and sea; post, telegraph, telephone—Mineral products: Metals—Mineral products: Fuel, building material—Vegetable products: Distribution of vegetables—Vegetable products: Food and medicinal plants—Vegetable products: Industrial plants—Animal products: Distribution of animals—Animal products: Food, furs, fisheries—Trade routes and centres—Manufacturing centres—Industry and trade of Great Britain.

The lectures of this course, whilst treating general commercial geography, will have special reference to the commercial conditions and relations of the different elements of the British Empire.

# APPENDIX D.

HERIOT-WATT COLLEGE, EDINBURGH. INDUSTRIAL AND COMMERCIAL  
GEOGRAPHY.

(Dr. Andrew J. Herbertson, F.R.S.E., F.R.G.S.)

Commercial or economic geography is the description of the surface of the earth, with special reference to the distribution of commodities of economic importance, their discovery, production, manufacture, transport, and exchange.

As a preliminary, it is necessary to have a knowledge of general geographical facts and principles, and their economic significance. Accordingly, the first part of the course will deal with the distribution of land and water, and of climates; of the principal plant, animal, and mineral products; and of mankind considered from an economic point of view.

In these lectures special attention will be paid to the use of maps and diagrams.

In the next part of the course, means of transport by land and water, the great trade routes and main telegraph lines of the world, will be discussed.

The last part will deal with the economic geography of the chief trading countries.

All these subjects cannot be discussed in detail in a single course. In the present session special attention will be given to the distribution of Food Stuffs, to the Great Ocean Routes, and to the Economic Geography of Britain and all Britanic Lands.

One evening every month will be devoted to the consideration of recent consular and other reports on the state and prospect of trade in various parts of the world, and topics of current interest.

# APPENDIX E.

YORKSHIRE WEST RIDING COUNTY COUNCIL. SYLLABUS OF LECTURES  
ON COMMERCIAL GEOGRAPHY.

(Lecturer: E. R. Wethey, M.A., F.R.G.S.)

*A.—The Principles of Commercial Geography.*—Introductory principles and conditions underlying commercial geography—Climate and its effects—Seas, mountains, and rivers from an economic aspect—The raw material

of commerce—Mankind and distribution of population—The growth of towns—Means and difficulties of transport—Means and difficulties of exchange—Commercial countries—Political influences—Special commodities: Wool—Special commodities: Cereals—Special commodities: Coal.

*B.—The Application of the Principles to the British Empire.*—The British Isles: Commercial advantages and disadvantages—The British Isles: Leading industries—India—Canada—Australia and New Zealand—South Africa—Tropical “colonies”—War and commerce—British commercial competitors—Past, present, and future markets—Commercial questions of the day in relation to commercial geography—Review of the British Empire.

The lectures, which have been arranged for by the Technical Instruction Committee of the West Riding County Council, will be given in the Chemical Lecture Room of the Leeds Institute of Science, Art, and Literature, on Saturday evenings (beginning from 8th October), at 6-30 p.m. Each lecture will be illustrated by lantern slides.\*

## APPENDIX E\*.

### SYLLABUS FOR COMMERCIAL GEOGRAPHY.

(Printed in the West Riding of Yorkshire Technical Instruction Handbook.)

Classes in general geography will not be recognised as eligible for aîd. A good grounding in the physical features of the earth's crust, the variations in climate, and in animal and vegetable life, must have been received before a scholar enters upon the study of commercial geography, which deals with the geographical distribution of commercial commodities, chiefly food, with raw and manufactured products, and minerals, and with various facilities and hindrances to trade.

The full course is divided into three stages, as follows:—

*Elementary Stage.*—The British Empire, means of communication and transit by land and by water, the trade routes and facilities for communication with the British Isles and with all the more important countries of the world.

The subject matter in the elementary stage might well be treated as indicated below:—

*Principles and Conditions underlying Commercial Geography.*—Climate and its effect on the (a) temperature, (b) rainfall—Sea, mountains, and rivers from an economic standpoint—The raw material of commerce—Mankind and distribution of populations—Growth of towns—Means and difficulties of transport—Means and difficulties of exchange—Political influences—Agricultural, manufacturing, and commercial countries—Some special commodities: Wool, cereals, coals, etc.

*The Application of the Principles to the British Empire.*—The British Isles: Commercial advantages and disadvantages, products, commerce, communications and leading industries—Commercial geography of India, Canada, Australia, South Africa, and the tropical colonies: (a) Strategic points and coaling stations, (b) plantations—War and commerce—British commercial competitors—New markets and lost markets—Commercial questions of the day in their relation to commercial geography—Review of the British Empire: (a) The body, (b) the nerves and arteries.

*Intermediate Stage.*—Foreign countries; the commercial relations of each with Great Britain and with other countries as affecting the interests of Great Britain.

It is suggested that each country should be dealt with on lines similar to the following:—(1) Position, configuration, and climate, and their influence on the prosperity of the country—(2) Raw productions: (a) Mineral, (b) vegetable, (c) animal (how and where found, how rendered of commercial value, for what used, and price, fluctuant or otherwise)—(3) Manufactures, and markets therefor—(4) Means of transport and communication, natural

\* About 50 each lecture. Audience consists of secondary and primary teachers, with one or two headmasters of grammar schools as well.—E. R. W.

and artificial—(5) Exports, (6) Imports (natural or artificial, tariffs, restrictions to the development of trade)—(7) Seaports, riverports, and other commercial towns—(8) Trade routes traversed by British ships bearing imports and exports—(9) Foreign competition encountered by British merchants and extent thereof.

*Advanced Stage.*—The commercial geography of the Baltic, Mediterranean, Eastern, and other “Trades” to be thoroughly studied, commencing with (a) the raw and manufactured material, and the countries connected with each “trade”; (b) the statistics relating thereto, chiefly those of the last five years; (c) the British and foreign shipping engaged in the carrying trade, with the percentage of increase or decrease in each instance, during the past five or ten years; (d) the trade routes covered; (e) the wholesale markets in which the cargoes are sold wholly or in part, such as the Baltic, corn, tea, wool, and coal markets; and (f) the methods of buying and selling, with current market reports, etc., etc.

The full course should embrace the study of the localities where, and the geographical and local conditions under which the various commodities are produced; the means of transit and the trade routes available, both inland and for export, together with the distances and ordinary modes of conveyance to important markets, the quantities available for export, and the actual recent rates of export to various countries; neutral markets and extent of British trade with them; the quantities in demand as imports, and the extent to which this demand is met by various foreign countries; the capacities of countries for commercial development, including both old and new countries; weights and measures, currencies, tariffs, postal and telegraphic arrangements, and social and political characteristics likely to affect trade; ports and harbours, lighthouses and lightships, coaling stations. Maps showing the districts producing the more important natural and manufactured commodities should be made use of.

Special maps showing rivers, canals, railways, cable, steamship, caravan trade routes, and producing districts should be obtained.

It would be helpful if the students were required to draw a series of charts or maps, each of them illustrating some particular characteristic of the country under revision and on the following lines showing: (1) Contour of the land, lines of drainage, and particular localities of the river basins; (2) Distribution of mineral products (details can be obtained and filled in from the text-book); (3) Distribution of vegetable products; (4) Distribution of industries; (5) Distribution of density of population; (6) Canal, railway routes, and trade lines; (7) Steamship routes to nearest countries and trade centres, etc., etc., until each characteristic has been so exhausted.

The maps might be placed on the left page, and the student's notes thereon on right page of the note book.

In order that students may see and examine the real objects spoken of, it is recommended that a well-chosen museum for practical teaching be provided; when a commodity is being dealt with it would be well to show it, not only in its natural state, but also in the various stages of manipulation to which it is subjected before the useful article is produced. Where the exhibition of the object is only imperfect, pictures of the object with its native surroundings should be shown.

---

## APPENDIX F.

### SYLLABUS OF UNIVERSITY EXTENSION COURSE OF LECTURES ON OPENINGS FOR BRITISH TRADE: LESSONS FROM THE COLONIES AND FOREIGN COUNTRIES,

(By G. G. Chisholm, M.A., B.Sc.)

#### *Part I.—Asia and Europe.*

Lectures 1 to 4, China.—Situation and surface features—Isolation of China, and especially of the great populous plains and cultivable regions—Climate: Monsoon climates in general; modifications of the typical monsoon



climate in China—Settlement of China by the Chinese—Characteristics of the people—Means of communication in China by land and by water—Roads and wheeled traffic in northern China—The loess country—Absence of cart traffic in southern China—Chinese waterways, natural and artificial—Effects of climate on utilisation of waterways—Difficulties of navigation, in some cases at high water, and in others at low water—Cost of transport by land and water—Products and mineral resources: Agricultural and animal products of northern and southern China—Room for expansion of agricultural production in Manchuria—Mineral resources—Importance of coal and iron in northern, southern, and western China—Reasons for the relatively small production of coal and iron, notwithstanding this natural wealth—Copper, tin, etc., in Yunnan—Railways in China: Their history up to the present time; the most important projects now under consideration—Steam-driven machinery in China—Some probable effects of the rapid introduction of railways, river steamers, and modern machinery.

It would occupy too much space to quote in detail the outlines of the other lectures, which were on the following subjects:—(5) Japan, (6 and 7) British Indian Empire, (8) Countries on the Frontier of India proper, (9) the German Empire, (10) British trade with Eastern Europe and Siberia.

*Part II.—America, Africa, and Australasia.*

Ten lectures on Canada, United States, British West Indies, Tropical America, Egypt and the Egyptian Soudan, British Equatorial Africa, the Cape Colony and South Africa, Australia, New Zealand.

*Part III.—Lessons from Abroad, especially in their Application to the Home Trade.*

(1) Causes that have led to an excessive development of the external commerce of the United Kingdom; (2) Means of communication in the British Isles; (3) Some non-geographical factors in commercial competition; (4) Possibilities of British agriculture; (5) Ireland.

---

APPENDIX G.

THE LONDON CHAMBER OF COMMERCE SCHEMES OF  
COMMERCIAL EXAMINATION.

*Junior Certificate.*—Commercial Geography is an optional subject. It includes Physical, Political, Commercial, and Industrial Geography of the British Isles, Colonies, and Dependencies.

*Senior Certificate.*—Geography with special reference to Commerce is an obligatory subject.

SYLLABUS.

**GEOGRAPHY.—Physical and Commercial.**—Materials of which the earth's crust is chiefly composed—Causes of the configuration of the surface—The principal ranges of mountains—Climate—The distribution of rainfall—The relation of rainfall to the temperature and pressure of the atmosphere—Irrigation—Outline of the laws relating to wind currents—Nature of storms—Influences of climate upon the vegetation and animal life of different countries—The relation of the climate and the configuration of a country to the work and habits of its inhabitants—The principal centres of commerce of the world—The chief railway and shipping routes connecting these centres—The distribution of coal—The relation of the occurrence of coal to the various industries in a country—The principal centres of production of metals, such as iron, gold, silver, nickel, tin, copper, lead, etc.—The chief mining districts—Distribution of population and relative density of population—The position of cities, and the conditions favourable or unfavourable to the growth of great commercial centres—The most important agricultural areas—The

sources of supply to Britain of corn, rice, maize, potatoes, fruit, green crops, etc.—The chief sources of tea, coffee, cocoa, sugar, and tobacco—The wine districts—The relation of production in the British Isles to the import of foods and clothing—The principal districts in the world for the production of silk, wool, cotton, flax, and jute—The sources of the most important materials used in building—The sources of the raw materials for the alkali and acid trades, and for the production of some of the more common medicinal substances of vegetable and mineral origin.

---

## APPENDIX H.

### THE SOCIETY OF ARTS SYLLABUS IN COMMERCIAL GEOGRAPHY.

(Examiner.—Hugh Robert Mill, D.Sc., F.R.S.E., F.R.G.S.)

(1) It should be borne in mind that commercial or economic geography can never be satisfactorily studied without a sound knowledge of general geography which underlies it, and deals with the great permanent features of the Earth's crust; their adaptability to the purposes of humanity; the uses to which nature or man has put the surface; climate, as determined by altitude, rainfall, temperature; vegetable and animal life, in their broad characteristics.

(2) Geography, in its widest sense, is the study of the Earth's surface (land and water), its physical features, climate, vegetation, animal life, in their relations to each other, and with special reference to the human communities that live upon that surface.

(3) Commercial or economic geography may be defined as the department that deals with the geographical distribution of commercial commodities—chiefly food products, raw material, manufactured goods.

It implies a knowledge of—(1) The localities where, and the geographical or local conditions under which, these are produced; quantities available for export; the capacities of new countries, like those of Africa and Australia, for commercial development. (2) The various facilities and hindrances to trade, so far as these are geographical, including such subjects as tariffs, currencies, weights and measures, and other local conditions; political and social characteristics likely to affect trade; communications by land and sea, *i.e.*, transport, telegraphs, postal arrangements. Under this head trade routes of all kinds are of the first importance; and the conditions which may render them more or less hazardous; the position of ports, harbours, coaling stations, and refuges, have to be considered.

(4) The special subject of examination will be the Commercial Geography of the British Empire, with reference mainly to the American, the Australasian, and the Asiatic colonies.

The subject need not be treated in minute detail; but the staple productions of each part of the empire must be clearly understood, as well as the position and land connections of the great seaports, the main trade and mail routes by sea and land; the lines of telegraph cables, and the chief coaling stations. The general principles of the colonial governments, the languages spoken by large sections of the population, and the coinage in use, are also important. The United Kingdom may be included in the examination, but no greater stress will be laid upon it than upon any other part of the empire.

Special attention is called to the importance of studying the general geography of the British Empire on a good globe (not necessarily a large one), as there is no other means available for learning the relative position of its various parts. Maps of the several colonies should also be carefully studied.

## APPENDIX I.

### UNION OF LANCASHIRE AND CHESHIRE INSTITUTES' SYLLABUS FOR EXAMINATIONS IN 1899.

**GEOGRAPHY.—Elementary Grade.**—General Geography of England and Wales, their chief industries and means of communication by land and railway.

The instruction should commence with the locality of the school and town, and proceed to that of the county and the country. The chief points to be noticed are the industries (agricultural, mining, manufacturing, and commercial) of England and Wales, the mountain and river systems, the chief railway and canal communications, and the most important towns. Importance is attached to the commercial aspects of this subject, the exports and imports of the country, and their origin. The candidate must specially have a knowledge of the counties of Lancashire, Cheshire, and Derbyshire.

**NOTE.**—No candidate must be presented who has previously obtained a first-class pass in this grade.

**Commercial Grade.**—The geographical distribution of commercial commodities—chiefly food products, raw products, and manufactured products. A knowledge of (1) The localities where, and the geographical and local conditions under which these are produced; quantities available for export, colonisation and the conditions of successful industry in the British possessions generally. (2) Various facilities and hindrances to trade—as languages, tariffs, currencies, weights and measures; communications by land and sea—i.e., transports, telegraphs, postal arrangements; the distances, trade routes, and ordinary modes of conveyance to import markets; ports, harbours, coaling stations, harbours of refuge. The subject of examination for 1899 will be "The British Empire," the questions being mainly confined to the American and Australian Colonies, and to India.

---

## APPENDIX K.

### SYLLABUS OF GEOGRAPHY REQUIRED IN ENTRANCE EXAMINATION OF L'ECOLE DES HAUTES ETUDES COMMERCIALES, PARIS.

(1) *Object and Use of Geography.*—How geography is applied to the study of economic questions. The use of maps and diagrammatic sketches.

(2) *France.*—Physical geography: Relationship between it and economic geography—The nature of the soil, especially of the cultivable soil—Minerals—Relief: Study of the massives, chains, plateaus, plains, and valleys—The influence of relief in helping or hindering communications—Climates: The principal climatic differences, oceanic, Mediterranean, and continental—Winds and rains—The influence of different climates on forests and cultures, on meadows, and coastal navigation—Rivers: Physical description; their use to agriculture through irrigation; to industry as a source of power; to commerce through navigation—Coasts: Form, nature, ease or difficulty of access; tides and fishing—Agriculture: The general condition of French agriculture; principal products (cereals, vines, forests, etc.)—Importance of stock-raising and its products—Industry: The general condition of French industry—Deficiency of coal and of raw materials—The productions of chief industrial centres, metallurgic, alimentary, and textile—Transport routes: The network of navigable routes—Their relationship to relief—Nature and importance of the produce transported in the different regions—The network of railways—The great railway companies—Physical and economic study of the principal lines—Their relationship to the chief ports and to the chief foreign railways—Great oceanic navigation companies—Commerce: Its value—Nature and origin of the chief imports—Nature and destination of the chief exports—Foreign competition.



(3) *The French Colonies*.\*—Physical and economic study of French colonies in Africa, in Asia, Oceania, and America—Study of the climates—Mineral and agricultural resources—Commercial relations with France and with other countries.

(4) *Europe*.\*—Physical and economic study of the different states and their colonies—Their chief natural riches and the causes which have contributed to the development of their commercial and industrial activity—Population and density—Emigration and colonisation—The chief international routes—Commercial relations with France.

(5) *Asia*.\*—Extent, the population of the different countries, and the chief ports visited by European ships—The chief railways of Asia.

(6) *Africa*.\*—Summary of physical geography—Distinction between temperate and tropical climates—Division of Africa among European nations—Summary of physical and economic geography of different countries.

(7) *Oceania, Australia, and America*.\*—The study of their natural resources—The progress and power of the United States—The rôle of European emigration—The problems of the isthmuses—The relations with France and with Europe.

---

#### APPENDIX L.

#### SYLLABUS OF ECONOMIC GEOGRAPHY IN L'ECOLE DES HAUTES ETUDES COMMERCIALES, PARIS.

(Economic Geography, two years.)

The course in Economic Geography will deal with the following matters in each country:—Physical geography, applied to the needs of economic instruction; the close and reciprocal connection between nature and man—Races: population, density and movement; causes of increase and decrease; emigration and immigration and their economic consequences—Nature of the soil—Climates, oceanic and continental: Winds and rains: Influence on climate, on colonisation, products and exploitation of the soil; on maritime relations—Mines, minerals: Coal mines, quarries, salt and mineral springs—The salt marshes, ways of exploiting and comparison of products—Agriculture, general conditions: Nature of ownership in different countries; kinds of products; alimentary, arborescent, forest, and industrial cultures; progress or decay; improvements of methods of manuring, etc; grassy and meadow lands and rearing of domestic animals; hunting; fishing in fresh and salt water—Industry, chief conditions: Local causes furthering or hindering the utilisation of raw materials; great industrial centres, their origin and their development; exportation industries; the comparative condition of the great European industries—Means of communication: Navigable rivers and their rôle in internal transport; canals, their routes, connections, junctions to rivers, and to railways, internal as well as foreign; quantity and nature of goods carried; canals in course of construction, projected, and desirable—Railways: Physical and economic study of the great lines; how the lines are connected to the great ports; the importance of their traffic—The auxiliaries of canals and railways, the great roadways and their use; the great ocean navigation companies; the great ports, their accommodation, tonnage, and trade; the merchant of the different states and their comparative marine—Commerce: Value of exchange: distribution of imports and exports among the different European countries, and the variations of trade in the last 20 years. (The constant comparison, by means of precise and well-chosen statistics, will throw much light on the economic relations of

---

\* Lists of countries and colonies not quoted.

France over the other countries of Europe.) A brief review of the languages spoken in the different countries, their political institutions, and their commercial bent—Social condition and national characteristics.

First year 40 lessons, European countries. Second year 45 lessons, extra European countries.

(The detailed syllabuses are published, but are not given here.)

---

## APPENDIX M.

### SYLLABUS OF ECONOMIC GEOGRAPHY IN INSTITUT SUPERIEUR DE COMMERCE, D'ANVERS.

(Commercial and Industrial Geography, three hours per week.)

Topographical and statistical information about the different countries of Europe, and of Asia, Africa, America, Australia, and Polynesia. These are taken from the most recent consular reports and other recent publications, and deal with the following points:—

(1) The topographical situation, constitution of the soil, mineral, animal, and vegetable products—(2) The political and social condition: Institutions and their influence on the prosperity of the country—Condition of the public finance, national wealth, prosperity or decline, and their causes—(3) Principal products of each country, and the commodities which can be obtained with advantage—Table of exports—(4) The principal products which each country must import, especially those which Belgium furnishes, and those which it should be able to furnish—A table of imports—(5) General sketch of the character of economic and tariff legislation of each country—Obstacles and facilities of commerce—Customs of the people in their relationship to commerce—(6) Detailed notices of the principal commercial centres, and the ways in which business is conducted there—The origin and determining causes of the commercial relations between different countries.

The third year's course is given to those students wishing the "Diplome de licencié du degré supérieur en sciences commerciales et consulaires" in industrial and commercial geography. In addition to the course already outlined the following syllabus is followed. The detailed study of the industrial geography of Belgium and of the economic geography of different countries. Industrial statistics. Statistics, their object, their utility, their characteristics, their divisions, etc. Special study of statistics, of imports, of exports, of transports, etc. Trade of ports of "entrepôt," fresh-water fish. Special statistics of Belgium, and statistics of the chief countries.

---

**Domestication of the African Elephant.**—M. P. Bourdairie, who has lately returned from a government mission to the French Congo, is a firm believer in the possibility of the domestication of the African elephant, and an advocate of experiments in that direction. Writing to the *Politique Coloniale* of October 8, he calls attention to the fact that an African elephant has during the past year been regularly employed at the Fernan Vaz mission for purposes of transport. It was captured by the Pahuins and purchased by Père Bichet, who succeeded in training it without the aid of Indian elephants. Although only four years old, it makes the journey from the mission to the forest—a distance of two miles—eight times a day, and transports loads of 1,800 to over 2,000 lbs. by the means of a wheeled vehicle. It finds its own food in the jungle, and can be driven by two native boys. When proceeding to the Congo during the summer, M. Bourdairie took with him a large number of Warden cases of india-rubber and gutta-percha plants (Isopandras, Heveas, and Castilloas) for introduction into the French colony.—*The Geographical Journal*.

## THE POSITION OF ECONOMIC GEOGRAPHY IN EDUCATION.

By DR. A. J. HERBERTSON, F.R.S.E., F.R.G.S., Lecturer on Industrial  
and Commercial Geography, Heriot-Watt College, Edinburgh.

[Read to the Society, in the Library, Tuesday, January 31st, 1899.]

THE movement for improved commercial education is part of a great change which, during the present century, has profoundly modified, in a greater or less degree, almost every civilised nation of the world. The 19th century has been marked by an extraordinary development of commercialism, an unprecedented acceleration of production, an enormous development of facilities of transport, and, consequently, of distribution, the constant opening of new markets, and the rapid exploitation of new lands. The consequent increase of population has led to the keenest competition both in production and distribution, and to a growing sense of the importance of the scientific study of both. Attention was at first chiefly paid to the scientific study of production, or technical education, and is now being directed to the organisation of a similar scientific study of distribution, or commercial education. To no country is this of more importance than our own. At the beginning of the present century Britain possessed a variety of advantages, many of them accidental and temporary, which appeared to ensure to it the commercial supremacy of the world. It was then impossible to foresee the rapid acceleration of mechanical invention and material progress which has done so much to equalise the nations of the world in the struggle for existence. At the beginning of the 20th century we are starting little, if at all, ahead of our competitors, and this is the more serious, inasmuch as we have all been brought up to believe in the commercial superiority of Britain as part of the world's fore-ordained and unchanging order. Fortunately it is now becoming recognised that the day of lucky accidents is practically over, and that the time has come to organise commercial progress. Our competitors know this at least as well as ourselves, and have recognised, on the whole, perhaps earlier than we, that the successful merchant or trader requires, no less than the teacher or doctor, a strictly professional training. It is not, of course, denied that life supplies an empirical training by rough methods of its own. The battle between scientific and empirical methods has already been hotly fought on the question of the training of teachers, and it is not necessary here to recapitulate the arguments. It is now generally agreed that the empirical method is long, laborious, and wasteful. This most people will be willing to admit in the case of commercial education also, and the problem is therefore narrowed to that of suggesting, so far as our present experience admits, of various practical steps which should, and could, be taken at the present time.



ECONOMIC GEOGRAPHY IN SCHOOLS.

The object of school is not to train the young for special professions, but to educate them; that is, so to draw out the whole of their latent faculties, not forgetting the sense training, that at the end of the school years they are well qualified to begin, and to profit by, a more specialised professional training. The great task is not to impart information about isolated branches of knowledge, but to help pupils to realise that they are dealing with the actual problems of a living world, and that their success in any department of life will depend on their understanding of the problems it presents and their solution of them. Teachers protest against any further subdivision of subjects as detrimental to the true educational well-being of their pupils, and rightly maintain that too early specialisation merely results in leaving the pupil stultified—neither well educated, nor even well instructed. It cannot be too clearly understood that in the matter of geographical education we are entirely with them. Nothing could be more mischievous, or more useless, than premature specialisation in certain aspects of geography, which can only be taken with advantage after a thorough and sound general education. The best service the school, whether primary or secondary, can be asked to render to the cause of commercial education is to improve and widen its general geographical teaching, laying stress on principles, on relations of cause and effect, on the influence exercised by geographical conditions on all the activities of man, and therefore, incidentally on his commercial and economic ones, in which many lessons will also be suggested by the events of the day. If this were done, the task of our various commercial institutions, at a later stage, would be a comparatively easy one, and it is precisely the absence of this preliminary geographical training which renders it so difficult for the specialist teacher of economic and commercial geography to do any but the most elementary work with his pupils.

The writer's experience, both as a teacher and as an examiner correcting papers from all parts of the United Kingdom, is, that while there has been progress in the methods of geographic teaching in recent years, much remains to be done; that too little attention is paid to principles, and that the physical basis of political and economic geography is too much neglected. Before any great improvement can be looked for teachers must themselves receive special geographical training. The programme for the new science schools which the Scottish Education Department have proposed may be taken as an indication of what will soon be required in all schools. The need for trained teachers to carry out such a programme is obvious, and it is all the more necessary as more time must be given to geography in most schools, which can be done without damaging other subjects only by a judicious use of the geographical aspects of those subjects. For instance, much elementary physics can be grouped with physical geography, applied mathematics with map making, and a free combination of history with physical geography, as well as political geography, may well be attempted. This will become increasingly possible as the codes grow less rigid and teachers are permitted to draw up their own syllabuses subject to the departmental criticism. In this matter the Scottish Department has again made a great step forward in their new code.

Such improvement in general education at school is a necessary preliminary to improvement in special education in commercial colleges. Without a proper grounding at the day school nothing but the most elementary work can be done at the commercial school and college, and this elementary work is practically all that is done at present. A great advance in the quality of work in commercial colleges will take place when the quality of that done in our primary, but more particularly our secondary schools, is improved.

#### IN THE COMMERCIAL SCHOOL AND COLLEGE, AND AT THE UNIVERSITY.

Geography is at once a necessary part of the business man's stock of knowledge, and one of the best educative elements in his training.

The scope of geography as a tool will vary from place to place. In a great commercial seaport the leading routes, ports, and markets of the world would be more fully treated than in a manufacturing centre, where only special ports, routes, and markets would require this detailed consideration. In one region some parts of the world are of more importance than others; the geography of these would require to be known in detail.

We may consider the needs of three different classes, each demanding a different scheme of education. (1) There are those going into business immediately on leaving school and who wish to supplement their knowledge by attending evening classes. (2) There are those who can afford to give more of their time to study, and take one or two years in a commercial college, or continue their studies in such a college combined with their daily work. (3) There are those who wish to specialise in the study of commercial subjects, and devote three or four years to this. These we may distinguish as elementary, intermediate, and advanced commercial training.

*Elementary Commercial Education: The Commercial Evening School.*—In the commercial evening school the geography course should be continued for at least two, and, if possible, for three years. In each year the student should gain a greater grasp of the principles of economic geography, as well as a more extensive knowledge of the distribution of economic products, and of trade centres and routes. In these two or three years a thorough knowledge of the economic conditions of the British Isles, of the principal British Colonies, and of the leading commercial countries of the world should be gained, as well as of the economic aspects of general geography. This is not so impossible if the preliminary training has been satisfactory. At present most teachers of economic geography find they have to spend much time in imparting to their pupils an elementary knowledge, more particularly of the principles of geography. Hard and fast syllabuses issued by a Central Department, and applying to all schools, are very undesirable; but carefully considered suggestions would be useful to the teacher in making up his programme, more particularly at present, when no very definite tradition as to the content of economic geography exists.

Each teacher should be at liberty to draw up his own programme, which should depend on the economic conditions of the centre, and also on the interests of the teacher himself. Any examinations should be

conducted—as far as this is possible—on the teacher's syllabus, and not on those of a central body. While no definite syllabus should be prescribed, a few suggestions may be found useful.

There are several ways in which such a class may be profitably conducted:—

(1) For instance, a detailed study of the economic products of the home region, and of the regions with which it trades, might be made the means of imparting the most important detailed information that is required by the business man, and, at the same time, form the basis for a study of the main principles of economic geography.

(2) The British Isles may be taken as the area for detailed study, and the principles deduced from the facts learned in connection with them, such as the climatic control of wheat farming, the coal control of industry, and so on.

(3) Another useful method of beginning the study of commercial geography is to revise the facts of general geography from an economic point of view. To study the circulation of the atmosphere, for instance, and its relationship and effect on navigation, or the distribution of heat and its relationship to different types of plants.

Each of these methods has been adopted by one or other of the teachers at present active in our evening commercial schools. In a few years the experience gained will allow each teacher to find out what is really best for his pupils. At the same time an occasional meeting of teachers of geography to discuss methods would be a useful means of hastening this.

What is required most at present is an extension of commercial schools, and a better co-ordinated curriculum for the pupils who wish to obtain a commercial certificate at them. For this certificate Economic Geography ought to be one of the compulsory subjects, and each student should have at least two sessions in the classes in this subject before entering for examination.

*Intermediate Commercial Geography: The Commercial College for Day Students.*—Many parents who feel that they cannot afford to send their boys to a University or to a Commercial College for full training, desire to continue the education of their sons for at least one or two years after leaving school in some higher institution. In Commercial Colleges provision should be made for the training of such pupils, and also for another type of pupils such as we find among the law students of the Scottish Universities. In Edinburgh and elsewhere law apprentices are permitted to attend University classes one or two hours a day during their apprenticeship. This might well be extended to youths beginning business, who would devote part of the day to acquiring a knowledge of practical business, and during another part be continuing their general education, specialised along economic lines. Commercial Colleges and the Faculties of Commerce in our Universities should provide for the needs of such students. The courses for such students should be more advanced and thorough than those of the commercial evening school. The main difference from the training in the evening school should be the greater insistence on the principles of economic geography combined with a study of the history of commerce, more particularly in the 19th century, thus giving the pupils a sound knowledge of the causes bringing about the great



economic development of present times. Such a training for those who will become the managers or principals of great businesses is of the utmost consequence. At present practically no systematic provision is made in this country for this education. Both in technical and commercial matters the country has become thoroughly alive to the necessity for proper education, and steps to ensure it are gradually being taken. Already our technical schools may be called satisfactory, and it is hoped that in a very few years our commercial departments will be equally well advanced. Both in technical and in commercial matters, however, there is a great lack of opportunity for higher education. This higher education is quite as essential as the more elementary.

*Higher Economic Education: The Faculty of Economics in the University.*—Those who are going to lead in the economic world need as thorough a training as those who lead our navies and armies. It may be said that the most valuable training will be in the actual world, and of course this is quite true; but to make this experience of the actual world of greatest service it is necessary to put our leaders in possession of a thorough knowledge of economic facts and principles, and, above all, to give them the power of applying the principles to the facts, to train their power of judgment and of prompt and efficient action. Economic geography from this point of view is no mere collection of statistical data, either of distribution of commodities or of the means of distributing commodities. It is not even confined to a study of the movement of commodities from place to place. An economic leader must be capable not merely of surveying the world with an economic eye and seeing all the economic movements that are taking place, but he must have a vision of the economic possibilities of regions and markets still undeveloped. He must be able to realise possibilities as well as actualities. Only in this way can we train men who will organise the victories of peace.

The task of training such leaders in the world of industry, trade and finance, is one which should fire the imagination of all our University authorities, more particularly those situated in great industrial and commercial cities, such as London, Birmingham, Manchester, Liverpool, Leeds, and Glasgow.

The economic, however, is not the only aspect of applied geography which should be dealt with in a modern University. A geographical training should be given to men of affairs, civil servants, consuls, explorers, and missionaries, as well as to business men. Provision should be made for special courses which would be useful to engineers, physicians, soldiers, and, in the maritime cities, also to sailors.

In all Universities the application of geography to teaching should form one of the most important features of the work of the department. Just as the training of the business man is a natural interest of the Universities of our great cities, so the training of the teachers for the economic schools fits in well with the plans of the older Universities.

In the economic side of every University a very thorough training must be given to the students. In addition to the theory and history of economics and other subjects taught in the economic schools of such Universities as Pennsylvania, although not yet in this country, economic

geography should be an essential subject. This should include not merely an intimate knowledge of the descriptive geography of the different countries of the world, from an economic point of view, but should deal with such facts as their weights and measures, their Customs regulations, and the nature of their ports and their facilities of communication by land and sea. It should include a study of the different races of the world from an economic point of view, considering their customs and prejudices, the nature of their clothing and utensils and their wants, more particularly those which can be supplied by our manufacturers. The student should have practical acquaintance with the produce of different parts of the world (*Waarenkunde*), although this need not necessarily be taught by the geographer.

The student should be accustomed to deal with statistics of all kinds, and should know the principal publications of our own and foreign countries where economic information can be obtained. Reports issued by the Boards of Trade, Agriculture, and other Government Departments; reports by our consuls and other official publications should be perfectly familiar to him, and he should be trained not merely to consult, but to interpret such documents; in other words, he must learn the way to handle geographic tools. A knowledge of the use of tools alone is not sufficient. The power to direct the using of tools is even more important. The habit of interpreting statistical and other reports, as well as of acquiring the information they contain, is essential in a successful merchant or financier. In the economic geography course, therefore, great stress should be laid on a thorough understanding of the principles of economic development, and as far as possible this should be applied not merely to the interpretation of the present economic conditions, but also to a forecast of those of the near future. The economic possibilities of many parts of our Empire, the possibility of making new or of extending old markets, should be constantly studied.

The economic section of a geographical department must, therefore, be equipped not merely with highly skilled teachers, but with adequate apparatus. The geographical department should be as extensive, and would probably prove as expensive, as any other department in the University. It requires its special institute as much as physics, or chemistry, or any other subject which has at once an academic and an economic interest.

The geographer has to know his types; he has to accumulate his samples as the biologist does; he needs more books and maps, more photographs and specimens, than any other teacher in a University, and these usually of a more expensive kind. The staff must be that of experts. Not merely one geographer is wanted in a modern University, but at least half a dozen, each of whom is a specialist in some section of the subject. Each teacher should be an expert in either one great region or in one aspect of geography. The specialist in one continent or country should every now and then be afforded facilities for visiting it. He should correspond with, and as far as possible know personally, the other leading authorities on his own region. All the important publications relating to that country should be systematically added to the departmental library under his charge. Each expert should be responsible for the up-to-date character of the books, maps,

specimens of his own special area. He should keep a card catalogue of published matter dealing with his special region, and should be able to give information to the business man as well as to the student on any subject connected with his particular region. While teaching should form part of his duties, general research and the direction of research should take up a large proportion of his time.

In the library, map, photographic and museum departments it is desirable that there should be the closest possible co-operation between the Geographical Department of the University, the local Chamber of Commerce, and the Geographical Society. All of these bodies are constantly accumulating literature, etc., of economic interest, which it would be well to unite into one collection arranged in a uniform manner. The collections should be so arranged that they are always easily studied, and they should be housed near enough the business centre of the town, as well as the University, that both the business men and the University students would find it easy to make constant use of them. This institute might well be the centre from which the loan collections of all kinds might be sent out to the towns round about, in the manner which Mr. Sowerbutts has suggested for his proposed Commercial Museum. In this way the closest connection would be maintained between the academic and the commercial world. The work of the Geographical Department would be given not merely the theoretic completeness of the University Department in the matter of research and of teaching, but both of these would be so determined by the practical needs of the community that the pupils trained by the Geographical Department would possess a thorough knowledge and practical power of dealing with concrete economic problems, and by it the research work published would have a completeness and a practical utility, whose importance it would be difficult to exaggerate.

**Geographical Association: Annual Meeting, December, 1897.**—The Annual Meeting was held in the Hall of the Society of Arts, John Street, Adelphi, on Thursday, December 23rd, at 4-30 p.m., Mr. Douglas W. Freshfield, President, in the chair. The Annual Report having been read, Mr. H. J. Mackinder, Reader in Geography at Oxford, in moving its adoption described it as a solid report, containing more items of progress than in any previous year. There were two points as to which he must be allowed to raise a question. The first was concerning the advisability of getting Geography and History recognised in the entrance examinations at the Public Schools. He feared that this might seem to suggest that Geography and History were childish matters which might be laid aside when a boy left the Preparatory School. They must not give the Headmasters of the Public Schools an excuse for saying that Geography was no business of theirs, for it is not true that Geography is an elementary subject. The other question touched the proposed Syllabus. Was it desirable to issue any *general* Syllabus at all? Though it might be good for a bad teacher to have a Syllabus prescribed, in the case of a good teacher the result was sure to be bad. Originality was thereby discouraged, and, as Elementary teachers knew to their cost, anything in the nature of a Code inevitably tended to stereotype teaching. The motion, having been seconded by Mr. A. C. Bartholomew, Reading, was carried unanimously, and officers were appointed.



## GEOGRAPHICAL EDUCATION AND COMMERCIAL MUSEUMS.

(Read by the Secretary to the Society, in the Library,  
December 19th, 1898.)

---

### EXTRACTS FROM THE RULES OF THE MANCHESTER GEOGRAPHICAL SOCIETY, HAVING REFERENCE TO THE OBJECT AND WORK OF THE SOCIETY.

THE OBJECT OF THE MANCHESTER GEOGRAPHICAL SOCIETY is to promote the study of all branches of Geographical Science, especially in its relations to commerce and civilisation.

THE WORK OF THE MANCHESTER GEOGRAPHICAL SOCIETY is carried on

1. By the study of official and scientific documents.

(a) Communications and correspondence.

(b) Communications with learned, industrial, and commercial societies.

(c) By correspondence with Consuls, men of science, explorers, missionaries, and travellers.

(d) And by the encouragement of the teaching of Geography in schools and colleges.

2. By meetings, at which papers are read, or lectures delivered by members or others.

3. By examining the possibility of opening new markets to commerce, and collecting information as to the number, character, needs, natural products and resources of such populations as have not yet been brought into relation with British commerce and industry.

4. By promoting and encouraging, in such ways as may be found expedient, either alone or in conjunction with other Societies, the exploration of the less-known regions of the earth.

5. By inquiring into all questions relating to British and Foreign colonisation and emigration.

6. By publishing a Journal of the proceedings of the Society, with a summary of geographical information.

7. By forming a collection of maps, charts, geographical works of reference, and specimens of raw materials and commercial products.

---

WHEN the Manchester Geographical Society was founded certain objects were set forth for the Society to aim at and accomplish. We are in the happy position to-day of knowing that some of these objects are either attained or are in course of attainment. For instance, we may say that we are constantly studying "official and scientific documents" with great profit to those who take a part in the study. With nearly 300 corresponding members and societies we are fairly carrying out another object of the Society.

We have not yet won for Geography the position we desire in the colleges, though we can report marked progress. In primary schools we have found from personal examination that great advance has been made. The second object of the Society, viz.—the holding of

meetings, at which papers are read and addresses and lectures delivered, is being very amply carried out. The sixth object, the publication of a Journal, has not been neglected, and the seventh is being very rapidly accomplished.

By gift, by purchase, or by exchange the Society is in possession of a remarkable and valuable collection of "maps, charts, and geographical works of reference," and this collection is being every day added to. We have also (thanks to the voluntary services of the devoted band of "Victorians") lanterns, and a large and remarkable collection of lantern slides. All this work has been done with difficulty, and some of the collections have not been made as useful as the Council could wish. The small number of members we possess places very limited funds at the Council's disposal, and prevents it employing sufficient personal assistance. The other objects of the Society have received only very casual attention from already over-worked officials. Circumstances are now arising which will compel the Society to make a step forward in the prosecution of its objects. I need not further refer to what those circumstances are; they will, in due time, be laid before the Society by the Council, and the members will be invited to face the position with vigour and determination.

The work of inquiry as to new markets, of emigration and migration (increased and more complete knowledge of our colonies being an important part of this question), the collection of raw materials and manufactures and of articles of exchange are subjects hitherto incidentally looked at. These questions may be dealt with under the head of a "Geographical and Commercial Museum." We may dismiss the Geographical Museum by saying that some foundation for this has been made, and we have every reason to hope and believe that further additions to this collection will be made. The Council trust they will be encouraged and supported in their endeavour to complete and carry out more fully the commercial objects of the Society.

It will be of interest briefly to remind the members of facts which have been frequently brought before them in reference to the treatment of these subjects on the Continent of Europe.

The methods and principles of training in geographical and commercial knowledge are based upon the scientific principle of drawing on the pupil from less to more. Practically, all continental teaching in relation to these subjects is definite and continuous, from the A, B, C of geography to its final application to war, diplomacy, or commerce. Then by the aid of commercial schools, comprehending internationally all the minutiae of trade purchases, sales, marketing, invoicing, bills of lading, bills of exchange, banking, correspondence in various languages, book-keeping, checking of accounts or accountancy and stock taking, showing profits or losses are taught, the work being carried out by these correspondents, as though the transactions were real and not fictitious. The result is that the pupil who has gone through such a course is fitted with competent knowledge to take his place in any post in the mercantile world. When, however, the practical application of these school exercises is reached, it is found that there is still something short. The manufacturer, the merchant, or the artizan may have a knowledge of the course of business, but what is required to be known is, what is the article or product dealt in.

The rapid acquisition and expansion of colonies by European powers adds intensity to this necessity.

The question is asked again and again, what do the countries produce, what have they to exchange, and what materials have the several countries to exchange with one another and with those outside? What are the costs of the various productions, and what is the cost of marketing?

Then commenced the founding of societies, with the main purpose of the study of commercial geography, the publishing of journals and papers, and, finally, the establishment of private effort (largely subsidised by municipalities and by governments) of Commercial Museums. It is needless here to dwell on the details of these institutions, but we may say that of various kinds, and in general and particular ways, there are institutions in the Argentine, in Austria-Hungary, Belgium, Brazil, France, Germany, Holland, Italy, Peru, Portugal, Roumania, Spain, Sweden, and Switzerland. In all, there are on the Continent about 80 of these institutions. They are not all alike, nor carried on in the same way, but they are all directed more or less to the inquiry of where does Britain trade, how does she do it, and how can we supplant her? Some of these societies and the Museums we have visited. One of the most perfect of these Commercial Museums is perhaps the one in Brussels. It is a large building, almost square, with a courtyard in the centre, giving light to both sides of each room, and is three or four storeys high. On one side of each room are arranged specimens of the raw or manufactured products of every country, arranged in geographical sequence, with the cost of the various exhibits at the place of origin with the terms of purchase, and the cost of transference to the Belgian ports. These may therefore be called goods of export. On the other side of the room are arranged the goods exported by each country to pay for the raw products in the various markets on the opposite side. These, from the point of view of the foreign market, may therefore be called goods of import. Any person in Brussels can go to this museum to make inquiry, and if the question is a proper and legitimate one in reference to trade the officials will endeavour to obtain the required information, and to obtain samples and prices of the products referred to, and this without any cost to the inquirer.

If the members will examine the catalogue of the Antwerp Museum they will be struck with the number of specimens of British products and of their values, terms of purchase, and cost of delivery to their ultimate market.

Is it any wonder when we consider that abroad, for the last twenty years, this work has been going on persistently, and is being pursued with avidity, that our people, with their slow, unscientific rule of thumb ways, are falling behind, and are likely to fall further back in the commercial conflict?

The Manchester Geographical Society was founded to raise a note of alarm and to provide the requisite information and concentration of effort to remedy the evil. For years we have been endeavouring to attract attention to the prime necessities of a commercial nation, and we have done so with some success, but not with the full measure we wish for. Pressure is now being increased, and we think the time has come to carry the designs of the Society a stage further. We wish to take up



with vigour the question of Geographical Education. We wish, in addition to having Foreign and Colonial correspondents, to be able to send experts, on behalf of the Society, to examine old and to look for new markets, and to report on what can be obtained in return for the goods sent out. We desire definite information on migration (as from Southern Russia to Siberia) and emigration (the Italians and others in South America), and the influence of trade and manufacture. So far as the collection of Colonial and raw products is concerned the Imperial Institute may be of great value, and we are indebted to it for a valuable contribution of natural products from some of our Colonies. The use of these collections can be greatly extended by the co-operation of the various local societies with the Imperial Institute, and by mutual co-operation amongst themselves. For contributions from other countries we can depend upon assistance being given by a number of correspondents abroad, who have already expressed their willingness to assist, and we shall also have help from friends at home. These Colonial and Foreign collections will form the basis of a Commercial Museum, which will require to be properly staffed for the collection, arrangement and diffusion of this absolutely necessary information, under, of course, proper regulations. We also wish to see every Geographical Society in the kingdom in possession of such a museum, and a system arranged amongst them by which, by exchange or loans, they could be practically one great commercial centre of information.

May I be allowed to remark that we receive maps, books, and issues on commercial and geographical subjects from almost all the countries of the world, except our own.

It is a shame that Blue Books, Consular reports, and other papers are not sent to us by our own Government free, which would be of great use.

Before I close may I refer to the "Victorians'" designs for next year. We have had a large box made, with shelves, and it is intended to have for our affiliated and other Societies a series of lectures prepared on the Colonies, with especial view to call attention to their natural products—agricultural, mineral, and artificial. It is intended to send any Society (affiliated) who have these lectures on the Colonies, a collection of products for exhibition in this box (or in one similar) fitted with four or five shelves. These shelves can be lifted out, and, placed side by side, they will form a small exhibition, and this can be enlarged to any required extent by the addition of boxes, for a week at least before the lecture is given. By this means interest will be awakened, and the lecturer and his audience will be in touch.

If we are enabled to have a fairly complete Museum, as we wish it to be, we shall be able to have many of these small collections in use, without interfering with the great collection.

We hope to have the active co-operation of other Geographical Societies in carrying on this valuable work, and so far as Manchester is concerned the designs indicated by the foregoing must depend upon the measure of support the Society receives. We appeal to the commercial people of the district to meet generously and promptly the financial requirements for this purpose, and the Society will become an institution of increased, and even incalculable, usefulness in the district.

THE ORTHOGRAPHY, LOCATION, AND SELECTION OF  
NAMES FOR THE NATIONAL MAPS.

By HENRY T. CROOK, M.Inst.C.E.

[Read at the British Association, Bristol, 1898, and read also with the Report of the Delegate in the Library, 1898.]

**A**MONG the subsidiary branches of cartographical science that of the method of determining correctly the location, orthography, and relative importance of place names is one which, in relation to our national maps, has not received the attention which its importance merits.

With the greater number of the mass of names which must appear there is little or no difficulty so far at least as orthography is concerned. Whether corrupted or not—and the majority of names are more or less corrupted—the form which is current locally must be adopted. But difficulty arises in ascertaining what is the accepted form, especially with the smaller places, detached houses, farms, and the ground features. Unless very great care is exercised there is the danger, through illiterate informants and misunderstanding of local pronunciation, of getting further away than ever from the original form of the name. As a rule it may be said that the more remote and sparsely populated district will give the most difficulties, but it is in such districts that the correctness of the names and their attachment to the right objects is of first importance topographically, not to speak of the archæological and antiquarian interest of the etymology and position. It is in regard to its success in the latter class of names that the adequacy of the method adopted must be judged, and not by the percentage of error in the whole numbers of names appearing on a map. The gravity of a blunder in the orthography or location of a name on the Mendip or the Cotswold Hills is not lessened by the fact that the names of the cities of Gloucester, Bristol, Bath, and Wells are correctly spelt and rightly placed.

At the inquiry into the state of the Ordnance Survey held in 1892-3 the subject was brought up by several witnesses, but except in the case of Welsh names it received little or no attention from the Committee. Upon my second attempt to introduce the subject the Chairman stated that he "was quite astonished at the immense care taken over these names." [Minutes of Evidence, 1564.] And the Committee in their report say that "we are of opinion that the principle on which the names have been ascertained" is a sound one.

As this "sound principle," worked out with the nth power of care, often brings out different results on the new from the old surveys, it

is worth a little examination. (See Appendix A.) It is, the report says, "the submission of every name to at least three competent persons, whose names and addresses are on record, and whose evidence forms the authority for its spelling and correctness." How the competency of the persons is ascertained is not stated.

I told the Committee that I thought it possible that in the early days of the Survey the precautions against error were less elaborate,\* which might account for some of the mistakes, which all who are interested can point to in localities with which they are familiar.

So many years have passed since the first Survey that such mistakes tend to become permanently established. The new generation adopts the name from the Ordnance Map or from other maps produced from it. In Anthony Trollope's "*Phineas Redux*" there is a passage in which this tendency is neatly described. "At the foot of the hill running under the wooden bridges straggles the Copperhouse Brook, so called by the hunting men of the present day, though men who knew the country of old, or rather the county, will tell you that it is properly called the River Cobber, and that the spacious old farm buildings above were once known as the Cobber Manor House. He would be a vain man who would now try to change the name, as Copperhouse Cross has been printed in all the lists of hunting meets for at least the last thirty years, and the Ordnance Survey has utterly rejected the two b's."

As a conspicuous example of this tendency of an entirely wrong name to get itself established, I instanced "The Peak," a name which the Ordnance Survey has attached to the table land lying to east of Kinder Scout. It is scarcely possible to conceive of a name more ridiculously inappropriate. It would be interesting to know the names of its sponsors, for locally the name is still quite unknown, though nearly every atlas, British and foreign, has copied the blunder.

A possible explanation of this error may be found in what Canon I. Taylor calls "The instinctive causativeness of the human mind, this perpetual endeavour to find a reason or a plausible explanation for everything." The Ordnance Survey finding themselves in the Peak district must necessarily cast about for some height to which to attach the name, evidently, not being aware, or ignoring the significance of the Celtic names abounding in the neighbourhood.

Mr. Harrison, in his recently published little work on the place names in the Liverpool district, suggests that the "Birket" for the name of the stream by Birkenhead, is an invention of the Ordnance Survey.

Instinctive causativeness is probably responsible for many analogous errors. The "Toad Lanes" of the North of England may be attributed to it. "Toad" being but the Surveyors' interpretation of the three competent persons pronunciation of "the old"—i.e., "Towd Lane." "Rushup" Edge in the Peak on both old and new maps (one-inch new map. Sheet 99), is another instance. On old maps preceding the Ordnance Survey it is given as "Rushop." It might have been expected that the characteristic local suffix would have been recognised. In

---

\* Sir Chas. Wilson said I was wrong. "The system of collecting names applies to the old and the new names." "The system is almost as old as the Survey itself." [Mins. of Evidence, page 222.]



close proximity we have Glossop, Ashop, and Hassop. From a merely scientific point of view the evidence afforded by the old map and these names is at least as good as that of the "three competent persons." Mistakes due to similar causes are those by which "Moppin's Brow" (brow means a steep slope) becomes "Mopping Brow" (which is suggestive of the big red handkerchief produced from the hat and applied to the forehead) and "Alders" becomes "Howlers." But perhaps the most striking case amongst these attempts to give a meaning to a name of which the origin is not understood is the well-known case of the mountain "Catchedicam," near Ulleswater, which appears on the Ordnance Map as "Catstye Cam."

That the three persons may at times be resolved into one person or no person at all was shown even by the few cases investigated by the Committee. For instance, the name "Bongs" in Lancashire struck me as peculiar, and I ventured to suggest that it was a mistake for "Banks," being not far from the phonetic rendering of the latter word as pronounced vernacularly. The reply to this was "Bongs" "was authorised by the occupier of the farm, and was therefore correctly inserted on the plans." In the early years of this century before the acquirement of the three R's was compulsory, a small tenant farmer seems to have been considered a competent philological authority. Mr. G. F. Chambers cited a number of cases of different spellings in the old and new maps of Sussex. He was at once confronted with the three competent persons (Mins. Evidence 3420). In one case the "sound principle" gives on the old map "Cutandly Wood," on the second occasion the three authorities (two bailiffs and a farmer) agree upon "Cutandlies Wood," the new map gives "Cut-and-lie Wood." This on the strength of the book of reference to the tithe plan. It is possible the latter form is correct; but then what about the "sound principle" and the three competent authorities whose opinion is ignored, although their names and addresses are on record.

Old maps, especially enclosure awards, having been made locally, afford good evidence of the correct forms of names, and that too in remote districts. The name Cow Hey, near Horwich, Lancashire, appears on both old and new surveys. "Hey" seems rather inappropriate in a stone-wall country. Reference to an enclosure award of 1816 gives "Ley," Cow Ley, and that I find is the name by which the place is known locally.

The possibility of wrong names becoming established by lapse of time, of "innate causativeness," and by the rather haphazard character of the "three person" system, are all well illustrated in the history of my attempt to get the Hog Lowes corrected. [Mins. of Evidence 1557.] Some miles to the north of Bolton is a hill some 1,250 feet high, which the Ordnance Survey calls Hog Lowe Pike, on its northern side is a clough called Hog Lowe Clough, on the old map there was also a farm called Hog Lowe. The name should be Uglow. It is Uglow on all the deeds connected with the land for 140 years back, at any rate, "the Uglow adjoining to the Uglow Pike." I do not commit myself to an opinion upon the meaning of the word; perhaps philologists may say it is of Ugrian origin. But however that may be, I urged that it was obvious that the place names must stand or fall together for the new map which was then in preparation. The

new maps have been published—the farm is Uglow, the pike and the clough are called Hog Lowe. I was informed from Southampton that “Uglow” was “authorised” for the old survey (that is more than 50 years ago), “but the balance of authority being in favour of Hog Lowe, that form was adopted.” For the new survey “Uglow” was adopted for the farm, and I was told who the three authorities were, one of the “competent persons” turning out to be the printed heading of a sheet of notepaper. With regard to the other two names I was merely informed that “Hog Lowe Clough and Hog Lowe Pike appear both to be well authorised.” A system which will admit of solecisms like this is hardly satisfactory.

As has been mentioned, the Committee of 1892-3 did not pay much attention to the matter of names except in the case of the Welsh maps, in which they reported that the system had not worked altogether satisfactorily. “The sound of a name is in the first instance incorrectly caught, and written down by a person ignorant of the language; this is then conjecturally corrected, from the faulty pronunciation so written down by a person having no local knowledge.” With slight modification this may be equally truly said of many names in England. The names in England, however, escaped the extra dangers of the revision by a “competent scholar” without local knowledge to which the Welsh were subjected, or we might have seen Bills o’ Jacks turned into William Johnson or even the Accounts of John.

The errors in name in the first map of Scotland led the Survey to adopt a method for the new maps, which is a step in the right direction, namely, seeking the assistance of local societies, in this case the Royal Scottish Geographical Society. This principle should be carried out still further by reference of doubtful names to more strictly local societies or a consultative body formed from them. Such a body would furnish better information than the first three persons met with in the locality. There are plenty of local societies scattered up and down the Kingdom, who would be equally willing and capable of giving assistance to the Survey in their respective localities. There would be no difficulty in getting a small council of competent gentlemen selected by these societies to voluntarily assist the superintendent of the district in the correct naming and description of its topography and antiquities, etc. There can be no doubt that these societies would gladly assist in this way, as it would give increased interest and utility to their work and improve the maps by preventing mistakes which now occur from want of local or special technical knowledge.

But if local knowledge be desirable in the case of the orthography of place names it is not only desirable, but essential to success in selecting the names for the smaller scale maps. The Report of the Committee of 1892-3 says: “In the reduction of the number of names from the 6-inch to the 1-inch map difficulties have occurred in making a good selection, as the work is done at Southampton by officers who may have no local knowledge of the district represented. In the old 1-inch maps the names were specially collected on the spot for these maps, and not more than could be placed on the map were taken. For the new 1-inch map the names are culled from the vast number of names shown on the 6-inch map, including, indeed, almost every name existing in the country. The difficulty of choosing the most important

names has been recognised, we are informed, by the Survey Department, and a surveyor is now sent to the ground to obtain the necessary information for the selection of names." The new sheets of the 1-inch map in the North of England, issued since this report, show that in spite of the precautions mentioned, the system is a failure. Many names useful in fixing localities, which were on the old map, have disappeared (See Appendix B for examples), and whilst the paucity of names is extraordinary, the selection of those which do appear is unsatisfactory. The scarcity of names is so great that it would be difficult to describe with clearness a route which followed some of the main roads, much more so if it included any cross-country roads. The bridges, always important points, are seldom named. The placing of the names, too, frequently leaves much doubt as to the exact locality or objects to which they apply. As often as not the name is written, without necessity, to the left as to the right of a locality, and sometimes at a great distance from it. The primary cause of most of these faults is the new method now adopted of photographic reduction. This system has sounded the knell of British cartography. The excessive exaggeration of the detail of roads and railways so crowds the maps that other information has to be excluded. Cartographers have long been agreed that it is impossible to make a general topographical map by simple reduction. The general map must be specially and independently designed, everything which is to appear upon it being taken into consideration; success depends upon the care exercised in the selection, arrangement, and relative subordination of detail and in its artistic treatment. The style of the later maps is so cumbersome that there is often difficulty to find space for the minimum number of names which are essential if the map is to be of any use. Notwithstanding the small space available the word "inn" is found scattered over the maps. The mere mention of "inn" is of no value. The "Pig and Whistle" or the "Goat and Compasses" are landmarks, but "inn," when the word is half-a-mile from the site of the hostelry, is nothing.

When the sheets embracing the Manchester district were published, I drew attention to some of the more glaring omissions and mistakes on sheet 85 and part of 98. An examination of new impressions of these sheets show that the Ordnance Survey tacitly admits the necessity for local knowledge in the production of correct maps, for on sheet 85 alone at least 50 rectifications have been made in accordance with my suggestions.

There is, however, nothing on the maps to indicate that there has been a revision, or even a new edition or reprint. The adjoining sheets have not been touched. They require corrections and additions quite as much as sheet 85. It may be assumed that what holds good of one sheet will hold good of all produced on the same principle, and therefore that local knowledge would be equally useful in improving the map, as far as that is possible, in the case of the other sheets. It is much to be regretted that when the Revision Department was organised it was not organised in local divisions, the superintendent and employés, as far as possible, being permanently stationed in their various districts; they would soon have been in touch with the locality and its people, and able to utilise local special knowledge and experience.



## APPENDIX A.

NAME ON OLD 1-INCH MAP.	NAME ON NEW 1-INCH MAP.	SHEET.
Marsley Green.	Marsland Green.	85
Mawkin's Wood.	Malkin's Wood.	"
Shaw Brook.	Moss Brook.	"
Deacon Lea.	Dakin's Lea.	84
Horse Car Moss.	Hoscar Moss.	"
Horulton.	Harleton.	"
Borsden.	Borsdane.	"
Farley Common.	Fowley Common.	"
Leashy Hall.	Lightshaw Hall.	"
Cowburn Edge.	Colborne Edge.	99
Malcroft.	Malcoff.	"
Surls Low.	Snels Low.	"
Elden.	Eldon.	"
How Bridge.	Howe Bridge.	84
Clowes Moss.	Close Moss.	86
Linthwaite.	Linfitts.	"
Paisleys.	Peaslows.	99

## APPENDIX B.

EXAMPLES OF USEFUL NAMES ON OLD 1-INCH MAP OMITTED IN  
THE NEW 1-INCH.

## SHEET 85.

\*Cheetham Hill.  
Kersal Moor.  
\*Lower Broughton.  
Hope.  
\*Weaste.  
\*Platt.  
Heaton.  
\*Daubhill.  
Moses Gate.  
\*Newtown.  
Sharples.  
\*Werneth.  
\*Hathershaw.  
Ogden Edge.  
Helpet Edge.  
Crompton Moor.  
Cherry Clough.

\*Elton.  
\*Patricroft.  
\*Hall-i-th'-Wood.  
\*Wardley Hall.  
\*Kersal Cell.  
\*Nico Ditch.  
Longford Brook.  
\*Whittle Brook.  
Astley Brook.  
Worsley Brook.  
Cockey Moor.  
\*Blackshaw Brook.  
Lady Bridge.  
\*Thicketford Bridge.  
\*Grotton Station.  
\*Clifton Junction Station.  
\*Stoneclough.  
\*Agecroft Bridge.

## SHEET 98.

\*Bowdon.  
\*Chorlton Brook.  
Street Lane.

## SHEET 84.

Gerards Bridge.  
Borsden Brook.  
Glovers Bridge.

Wallsuches.  
Ridgmont.

\*The names to which an asterisk is prefixed have been added in new impressions of sheets 85 and 98, issued some time after I called attention to the omissions.

SHEET 86.

Friarmere.  
Bills o' Jacks.  
Isle of Sky.  
Wain Stones.  
Harrop Edge.

Dean Head.  
Diggle Edge.  
Red Brook.  
Nab End.  
Scout Bridge.

At the meeting considerable discussion took place on this paper, and the Director of the Ordnance Survey said he would be glad to receive from any one corrections of the maps, so that in future issues they might be made, if, after examination, the corrections suggested were found correct.

**Prevalence of Northerly Winds and Snow Storms during the Spring.**—In respect of any opinions brought forward respecting the reason or causes for the persistent continuance of northerly winds now for the past three weeks, I venture to suggest that a condition of equilibrium of the atmosphere is attempted to be established about the times of each Equinoctial period, from the time that has elapsed from the last one. We may then suggest that we are witnessing a return current of air from the Arctic Circle district, that had become overloaded with air accumulated by the extra prevalence of southerly winds that prevailed since the Equinox of September last year. On going over my Meteorological Diary for October, 1898, I find 12 days with northerly winds (N., N.W., N.E., E.) against 19 days with southerly winds (S., S.E., S.W., W.); for November there were 13 days with northerly against 14 days southerly; for December there were 2 days north against 27 days southerly winds; for January, 1899, there were 7 northerly against 20 days southerly winds; for February there were 7 days northerly against 21 days southerly; and for March there are 14 days northerly against 18 days southerly winds. The totals for the six months appear to give 119 days of southerly winds (S., S.E., S.W., W.) and 55 days of northerly winds (N., N.W., N.E., E.), so that the equilibrium is even yet not established, and more northerly winds have yet to be faced ere the Equinoctial period has terminated. These snowstorms in the North Sea and coasts of Scotland and England would seem to belong to blizzards from the Northern Regions, such as are experienced in the prairies of Canada and the Steppes of Russia. They begin with cold weather and end with warmer weather, usually the reverse of any ordinary Atlantic cyclone, which begins with warm southerly winds, and ends with cold westerly winds in this country. An estimation by days only of wind prevalence might scarcely be allowed to cover the whole case, as it might be further accentuated by taking in velocity, so as to arrive at a proximate estimate of wind going north, and the quantity returning south. The Equinoctial period of September would probably seem to initiate the commencement of the struggle of the southerly winds to assert their supremacy over the northerly ones of the preceding six months. Their prevalence is maintained during the rest of the autumnal months in view of keeping up the equilibrium of the atmosphere in the Northern Regions, which they in the end succeed in overtopping.—W. G. BLACK, F.R.M.S., Edinburgh.

Days of Northerly and Southerly Winds. Six Months. April to September, 1898.								Days of Northerly and Southerly Winds. Six Months. October, 1898, to March, 1899.							
Winds.	1898.							Winds.	1898.						
	April	May	June	July	Aug.	Sept.	Totals		Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Totals
North .....	0	2	4	2	5	1	14	North .....	2	3	—	3	1	2	11
N.W. ....	0	4	2	5	5	3	19	N.W. ....	1	1	1	1	—	5	9
East .....	6	8	10	10	2	5	41	E. ....	7	8	1	3	3	3	25
N.E. ....	2	3	3	3	4	2	17	N.E. ....	2	1	—	—	3	4	10
West .....	10	10	16	14	7	11	68	West .....	6	7	17	9	9	10	58
S.W. ....	8	4	9	8	15	10	54	S.W. ....	6	2	10	6	7	6	37
South .....	4	0	2	1	5	9	21	S. ....	4	2	—	1	2	1	10
S.E. ....	3	2	1	3	1	2	12	S.E. ....	3	3	—	4	3	1	14
Totals ....	33	33	47	46	44	43	246	Totals ....	31	27	29	27	28	32	174
Winds.								Winds.							
North .....	8	17	19	20	16	11	91	North .....	12	13	2	7	7	14	55
South .....	25	16	28	26	28	32	155	South .....	19	14	27	20	21	18	119

## PROCEEDINGS OF THE SOCIETY.

JULY 1ST TO SEPTEMBER 30TH, 1898.

---

The 478th Meeting of the Society was held at the Fairfield Moravian Institute, on Saturday, July 2nd, 1898, at 3 p.m.

Upon the invitation of the Principal a party of members visited this institution. They were received by the Principal and other officers, and were taken about this quiet, unique settlement. The schools, the various houses, the chapel, and graveyard were duly pointed out and explained, and the very interesting history of the settlement was told. It was quite a surprise to many members present to find how powerfully this educational institute and settlement had in past years influenced those who had been taught in the schools, and to discover that many of those who have played a great part in the educational and philanthropic movements of the district were educated in this quiet place.

After tea, the members were invited to attend a re-union of the old scholars, presided over by Mr. Tallent-Bateman. They were much interested in the proceedings.

Very hearty thanks were tendered to our hosts for their kindness and hospitality. The PRINCIPAL responded.

---

The 479th Meeting of the Society was held at Nicholls' Hospital, Hyde Road, on Saturday, July 9th, 1898, at 3 p.m.

The Governor of the Hospital (Mr. J. S. Reid) having invited the members to visit the hospital and inspect it, and to see a cricket match between some of the boys and a Grammar School team, a number of members accepted the invitation.

They were shown over the institution—the class-rooms, the large hall, the kitchens, laundry, the dormitories, the gymnasium, workshops, and playground—and were very much delighted with their inspection. The obedience, orderliness, and cheerfulness of the boys was very marked. The one point of greatest interest in the visit was the Governor's account of boys who had left the institution, but who kept in touch with the hospital by correspondence or re-visitation, and the account by the master of the success generally of the boys in their allotted or selected sphere of labour.

The hospital has evidently been made a first-class instrument to produce the best result in the bringing up and training of the boys who may be fortunate enough to have entrance to its advantages.

After tea, Mr. J. HOWARD REED moved, and Mr. C. H. STOTT seconded, a resolution: "That the hearty thanks of the members be given to Mr. and Mrs. Reid for their hospitality and for their trouble in enabling those present to enjoy so pleasant and profitable an afternoon."

Mr. REID responded.



The 480th Meeting of the Society was held at "Finchwood," Marple, on Saturday, July 16th, 1898, at 5 p.m.

A number of members visited Marple, and were received by Mr. JOEL WAINWRIGHT, J.P., who acted as guide and host.

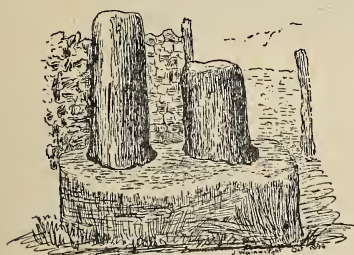
From Marple the conveyances took the members to Ludworth Moor—a delightful drive—and after a short walk across the moor "Robin Hood's Picking Pegs" were found in a corner of the field. Here photographs were taken.



LINGAM STONES AT LUDWORTH MOOR.

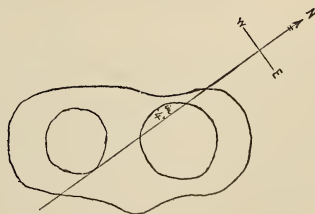
As the question of orientation enters into the study of these stones, Mr. Wainwright very kindly made exact measurements, and the following diagram is the result of his work:—

Robin Hood's Picking Pegs. LUDWORTH.



Elevation.

Note The northerly pillar now measures only 2 3/8 high above the base-stone: a fragment 2 5/8 high, part of the pillar originally, is now built in the wall round the corner



Plan.

There are at Disley similar stones, and for purposes of comparison a photograph of them has been taken and is here reproduced.

Mr. WAINWRIGHT made a few remarks upon the stones, stating that it need scarcely be said that the famous Robin Hood had no connection whatever with the monument, as there is not a scrap of historical evidence to show that he was ever in any way associated with it.

The northerly pillar now measures only 2 feet 5 inches high above the base stone; a fragment 2 feet 6 inches high has been broken off, and is



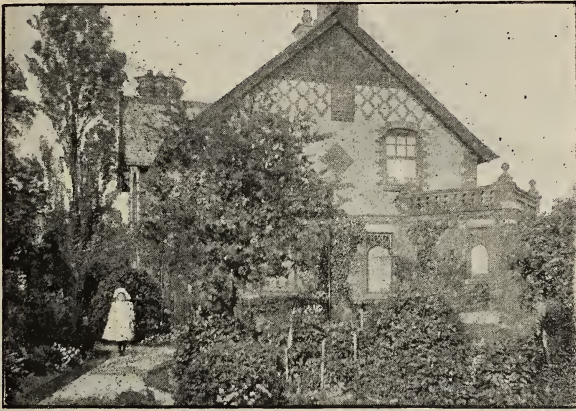
THE LINGAM STONES AT DISLEY.

built in the wall round the corner at the back. Like the bowstones on Lyme Moor and the round towers of Ireland, there is no doubt that this monument is an emblem of Nature worship. Those who are interested in the subject may find a full description of it in "The Memoirs of the Anthropological Society of London," also in many volumes in the Manchester Free Reference Library, which contains several distinct works on these emblems.

Mr. Edward Sellon writes in the above memoirs, that—"It may indeed be affirmed that there is scarcely a temple in India which has not its lingam, and in numerous instances this symbol is the only form under which the deity of the sanctuary is worshipped."

"To sum up the information which has recently been obtained on this interesting topic—interesting because it relates to the earliest worship practised by man—it may, in conclusion, be remarked, that this form of worship prevailed not only amongst the Hindus, Assyrians, Babylonians, Mexicans, Etruscans, Greeks, and Romans in ancient times, but it still forms an integral part of the worship of India, Thibet, China, Siam, Japan, and Southern Africa, and possibly further researches will prove, in numerous other countries also."

Some discussion ensued, after which the party were driven to Mr. Wainwright's beautiful house, "Finchwood." We are able to give a view of the house from the rose-garden.



FINCHWOOD, MARPLE, FROM THE ROSE GARDEN.

Tea was then served, after which a meeting was held on the lawn. In the chair, Mr. Alderman BOWES.

Mr. WAINWRIGHT read a description of the "Taj Mahal" at Agra, India, compiled from the "Romance of India" (M. Chevrillon) and from "Voyage Round the World in the *Ceylon*" (Wilkinson):—

#### THE TAJ.

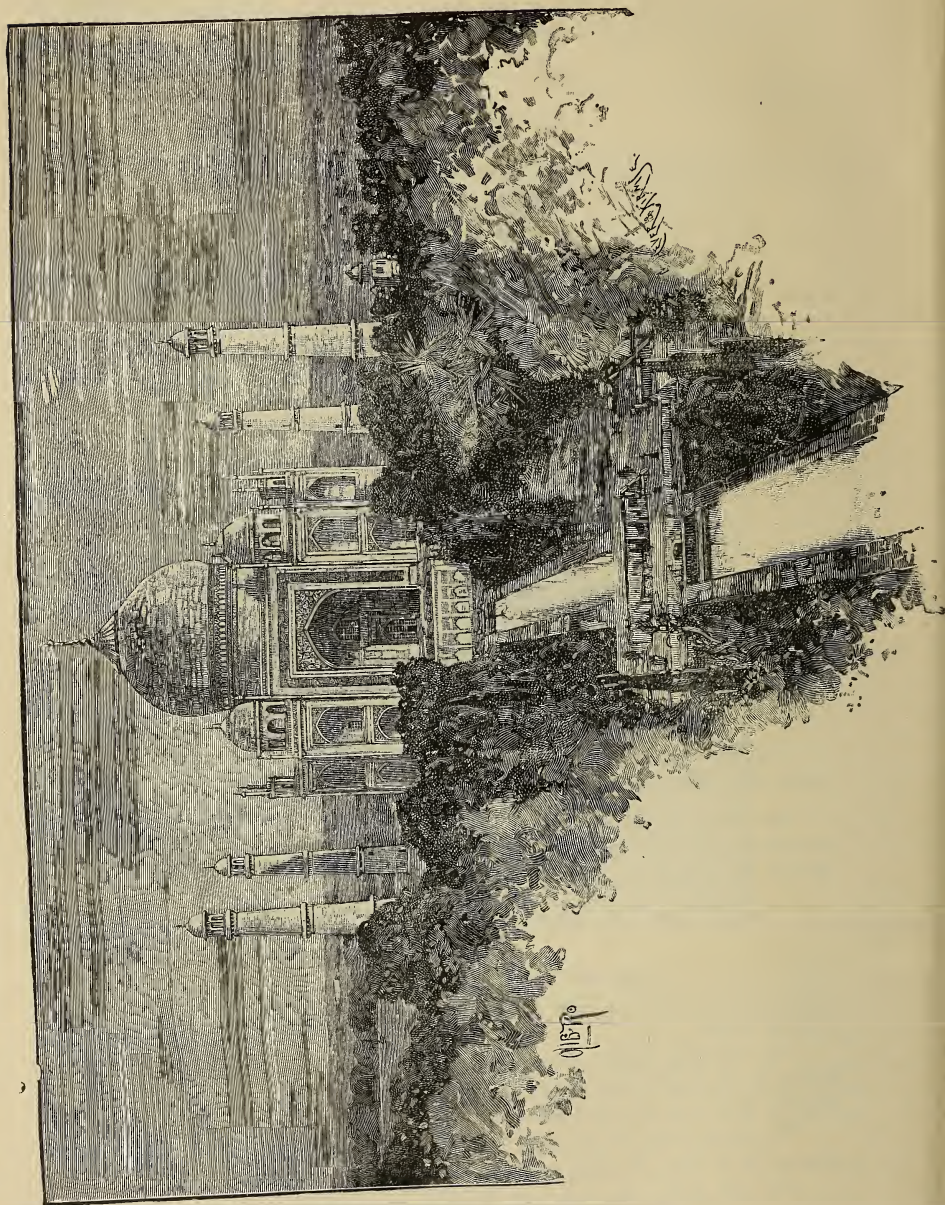
THE TAJ is a mausoleum erected by the Great Mogul, Shah Jehan, in memory of his favourite Queen. It is an irregular octagon, surmounted by a Persian dome.

The building itself—which stands on a marble platform 18 feet high, having at its angles four tall cylindrical minarets—is made of blocks of white marble, and rises to a height of 210 feet.

We alight from the carriage in front of a noble portico of red sandstone, pierced by a lofty Moorish archway covered with white arabesques.

We pass under the arch and the Taj appears in sight, some 400 yards away. Probably no masterpiece of architecture in the world produces an equal effect.





At the further extremity of a marvellous garden, reflected in all its whiteness in a lake of dark water which lies motionless, with clumps of black cypresses and great mounds of crimson flowers on its banks, *the perfect structure rises like a vision*. It is a floating dream, an ærial thing without weight, so accurate is the balance of the lines, and so faint the shadows on the virginal translucent stone.

These black cypresses framing it, these masses of verdure through which, here and there, the blue sky is seen; this turf in the strong sunlight, with the sharp black shadows of the trees falling across it—all these solid things render more unreal the *white vision* which seems ready to vanish into the light of the sky. I walked *towards it* along the marble bank of the lake, and the mausoleum assumed *relief*.

Approaching nearer, the eye takes more and more delight in the surfaces of the octagonal monument. These are rectangular expanses of polished marble, on which the light rests with a soft milky lustre. One had no idea that a thing so simple as mere surface, could be so beautiful, when it is broad and pure.

Then the eye follows the graceful carving, and well-ordered intertwining of great flowers—flowers of onyx and turquoise incrustated along a projecting part of the building—and the harmony of the delicate chasing, the marble lacework, the springing arches, the notched balustrades, the infinite play of the simple and the decorated.

The garden is the complement of the building, *both* uniting to form the *one* artistic conception. The avenues leading to the Taj are bordered with funereal trees—yews and cypresses—that render *still whiter* the far-off whiteness of the monument. Behind their slender cones, trees of luxuriant foliage are massed, adding depth and opulence to the more sombre growth. The stiff, dark trees, relieved against this light foliage stirred by the wind, rise, solemn, out of the thickets of roses and the great masses of unknown, *perfumed* flowers of this solitary garden.

Combinations like these are the work of an artist. Broad, open lawns, the crimson cups of flowers, petals of gold, swarms of humming birds, myriads of gorgeously-coloured butterflies, bring light and joy into the gloom which befits a cemetery.

The place is at once luminous and serious; it has all the rapture of a Musalman paradise—amorous and religious; and the poem in verdure unites with the poem in marble, to tell of peace and splendour.

I visit the Taj again at noonday. Under a vertical sun the *melancholy phantom is dead*, the *gentle sadness* of the mausoleum has disappeared. The great marble table upon which it stands has a *blinding* glitter. Reflected, back and forth from all sides, the sunlight multiplies its effect a hundred-fold, and some of the façades are like white-hot metal. The incrustations are sparks of living fire, and their hundred red flowers glow like burning coals.

The sacred texts and hieroglyphics set in the black marble, blaze as if written by the finger of an angry God. All the mystic rows of lotus and lily, in relief, which before had the softness of yellowed ivory, are now like flames upon the surface.

I retreat to the edge of the enclosure, and, dazzled, I see for an instant, relieved against the sky, the incandescent lines and surfaces of the edifice, implacable in its virgin whiteness. Certainly this strict simplicity, and the



intensity of this light, have something Semitic in their effect, like the "flaming sword" of the Bible. The minarets rise into the blue like columns of fire.

All around is the cool twilight of the over-arching trees. This garden is the work of a worshipper who desired to glorify Allah. It is a place for religious joy. "Let no man who is not pure in heart enter the garden of God," says the Arab text graven above the gate.

Inside at first, all is profound gloom, with the faint gleaming of a grating of ancient marble, ethereal carving around the tombs extending on and on with a yellowish lustre, as if the light itself were ancient and had been absorbed centuries ago. All the interlacing lines and curves of pallid marble continue until they vanish into the invisible.

In the centre are the tombs of the lovers, two small sarcophagi, on which rests a faint light from some unknown source.

This is all. There they lie in silence, surrounded by these perfect things, which celebrate their love lasting into death, isolated from all the world by the mysterious marble lace which enwraps them and seems to float around them like a dream; while the walls, tombs, and screens are ornamented with the most exquisite mosaic work—diamonds and jasper from the Punjaub, cornelians and agates from Thibet, coral from Arabia, sapphires and lapis lazuli from Ceylon.

High above, as if through dense mist, one sees the dome rise, rise, and never end.

Sounds even are no longer of the earth. A musical note uttered here is repeated above one's head in regions which one cannot see. Pure as the voice of an Ariel, it grows fainter, then dies; and suddenly is heard again, afar off, glorified, spiritualised, multiplied indefinitely, repeated by countless remote voices, by an unseen choir of angels, who carry it up, ascending higher and higher, until it loses itself in a faint sound which remains continuous, hovering on *like the music of a soul over the tomb of the beloved*.

At the conclusion of the reading, and after a few further remarks, a very hearty vote of thanks was passed to Mr. Wainwright and his family for the very kind way in which they had again received the members, and to Mr. Wainwright for his two addresses. The motion was proposed by Mr. RICHARD KARNOVSKY, seconded by Mr. ROBERTSHAW, supported by Mr. LETHERBROW and others.

Mr. WAINWRIGHT responded.

A number of photographs were taken by Mr. Harry Sowerbutts, which have been placed at our disposal, and some of them are here reproduced.

The 481st Meeting of the Society was held on Monday, July 18th, 1898.

A party of members made an excursion to Belgium, leaving by the Grimsby boat, and duly arriving at Antwerp after a pleasant sail.

Antwerp and Rùppelmonde (the birthplace of Mercator), Louvain, Liège, Chaudfontaine, Verviers, Spa, Huy, Namur, Dinant, Brussels, etc., were all visited with great pleasure.

At Louvain the party was received by Professor Gilson, who showed great kindness to the party, and at Brussels Professor Du fief was also very kind.



As these places have been frequently visited by parties of the members, it is sufficient to say here that the objects of interest were on this occasion the magnificent wood-work pulpits in churches, the beautiful iron-work, the picture galleries, and gardens and parks.

One of the party was a member of the International Congress of Navigation at Brussels, in connection with which a large amount of hospitality was shown, and from which very valuable information was obtained.

The return to Grimsby was very pleasant.

Hearty thanks were given to the guide, and to Professors Gilson and Du fief.

---

The 482nd Meeting of the Society was held on Saturday, August 13th, 1898.

A large party of members travelled to Accrington, and from thence drove to Longridge, calling on the way at Whalley Church and Abbey and at Stoneyhurst College.

Lunch was had at Whalley.

At Stoneyhurst the party was received by Father Sidgreaves, S.J., who very kindly took the party over the college and the library, into the grounds, and to the observatory. A long time was pleasantly spent in the college and at the observatory, where photographs were taken.

A few members of the British Astronomical Society accompanied the party, and they were much pleased with all they saw.

An informal meeting was held in the observatory, presided over by the Rev. S. A. STEINTHAL.

Councillor HAMPSON moved a very hearty vote of thanks to the college authorities, to Father Sidgreaves, S.J., and to the guide of the day, for permission given by the college authorities to view the college, to Father Sidgreaves, S.J., for his most interesting description, and to the guide for the arrangements for so very pleasant and instructive a day.

This was heartily seconded by Mr. J. C. BLAKE, and being supported by Mr. THOMAS WEIR, was unanimously adopted.

Father SIDGREAVES responded.

The drive was then continued to Longridge, where tea was obtained and the train taken for home.

---

The 483rd Meeting of the Society was held on Saturday, August 20th, 1898.

A large party of members again visited Saddleworth, at the invitation of Mr. THOMAS DENTITH, of Dobcross.

The train was taken to Greenfield, and there carriages awaited the party and conveyed the members through the Oldham side of Saddleworth by Lydgate, Cross Keys Inn, Delph, and to Dobcross. Tea was provided at Longhouse. This was a most interesting drive, through a part of Saddleworth not seen before by many of the party.

The Vicar of Lydgate allowed the party to visit the quaint church, and gave a history of its foundation.

After tea, the Rev. S. A. STEINTHAL took the chair at a meeting on the lawn, when very hearty thanks were tendered to Mr. and Mrs. Dentith for the hospitality they had shown to the party, and to Mr. Dentith for his leadership.

Councillor HAMPSON, Mr. J. D. WILDE, the SECRETARY, Mr. BELLAMY, and others took part in the proposal and recommendation of the vote, which was passed with acclamation.

Mr. T. DENTITH responded.

The party returned from Saddleworth Station.

The 484th Meeting of the Society was held on Tuesday, September 16th, 1898.

The delegate and several members of the Society (including Chevalier R. Froehlich) attended the meeting of the British Association at Bristol. The meeting was successful, and was of an unusual and interesting character.

Abstracts of several papers read at the meeting are given with this report, and some papers of interest were secured for the Journal.

The visitors in Section E included Mrs. Bishop, Mrs. Bent, and the now well-known M. Louis Rougemont.

The story of M. Rougemont has been told in the *Daily Chronicle* (and is in the Library), and need not now be re-told. It was a curious experience to see and hear him.

The papers in Section E were not very striking, but there was a good attendance in this section.

The Presidential address was a departure from the usual form, and gave rise to much discussion.

The address of the President of Section E was an admirable address on the "Geography of the Argentine."

The great address of the meeting was undoubtedly the lecture on "Phosphorescence." It was a lecture giving the results of many years of study, and was brilliantly delivered.

The meetings of delegates were duly attended, but nothing of great importance took place. The one point brought out was the need of more workers in connection with the various committees appointed by the Association for special work by the members of the societies represented by the delegates.

In this work there is a large field open for valuable research and for active co-operation. An examination of the yearly report gives a list of the various committees and of the secretaries to whom communications may be made.

The delegate urges the members to do their utmost in this direction. Already a number of our members are co-operating, but there is ample room for many more.

The hospitality of the Bristol people was very great, and the members sympathised with the local committee in the trouble they had in consequence of the burning of Colston Hall a few days before the meeting.

The Committee of the Association gave a practical direction to this sympathy by a donation to the funds of the local committee.

The churches, libraries, the new Cabot Tower, and most interesting places in Bristol were visited; the hot wells and Clifton were thoroughly enjoyed. And he must have been a difficult person to please who attended the meeting and who did not leave Bristol with very warm regard to the generous hosts who had made the week pass so pleasantly.

Excursions were made in every direction. One not to be soon forgotten was made to Bradford-on-Avon, Salisbury, Old Sarum, and Stonehenge.

At Salisbury tea was given at the Museum, where is a most wonderful collection of flint instruments, and the directors received the visitors with great heartiness. It was worth all the trouble of the journey to visit this beautiful museum.

A visit to Bath was equally pleasant, and so on to a large number of other places.

The visit to the Channel Fleet was not altogether a success for some.

The delegate secured a large number of photographic slides of the places visited, and they will no doubt often give great pleasure.

The next meeting is to be held at Dover, and international courtesies are to take place at the time with the French Society meeting at Boulogne at the same time.

The following are abstracts of some of the papers read:—

#### SHORT NOTES OF SOME PAPERS READ AT THE BRITISH ASSOCIATION, 1898.

##### *Theories on the Distribution of the Oceans and Continents.*

By J. W. GREGORY, D.Sc.

The main object of geomorphology is to explain the existing distribution of land and water on the globe. A remarkable series of coincidences in the form and arrangement of the land masses suggests that the distribution has been determined by some general principle and not by local accidents. The three most striking features that require explanation are the antipodal position of ocean and continents, the triangular shape of the geographical units, and the excess of water in the southern hemisphere. Attempts to explain this arrangement have been made deductively from general physical considerations, as by Elie de Beaumont, Lothian Green, and G. H. Darwin; and directly from the evidence of stratigraphical geology, as by Suess, Lapworth, and Michael-Levy. Thus Elie de Beaumont regarded the form of the continents as determined by the mountain chains, which he correlated into a regular geometrical network; while Lapworth regarded the distribution of land and water as due to a series of great earth-folds, the arches forming the continents, and the troughs forming the ocean basins. Suess has treated the subject synthetically; he has shown that the structure of the world can be explained by subsidences in the crust when subterranean support is removed by the shrinkage of the internal nucleus, and by the movements of elevation which produce the chains of fold-mountains. Suess's view explains the structure of the continents and ocean basins, but not their arrangement. To settle this problem fuller knowledge is needed as to the distribution of land and water in past times. Neumayr's attempt to settle this question for the Jurassic was premature, and his conclusions are untenable. We are thus



still dependent upon the deductive systems for suggestions as to the most profitable lines of research. Elie de Beaumont's famous scheme attached undue importance to linear symmetry and was too artificial. It led, however, to the tetrahedral theory of Lothian Green, which regards the world, not as shaped like a simple tetrahedron, but as a spheroid slightly flattened on four faces. Such flattenings occur on hollow, spherical shells, when they are deformed by uniformly distributed external pressure. The oceans would occupy the four depressions thus produced, and the land masses occur at the angles and along the edges. The existing geographical arrangement is in general agreement with this scheme; for as the tetrahedron is hemihedral the assumption that the lithosphere is tetrahedral explains the antipodal position of land and water, the excess of water in the southern hemisphere, and the southward tapering of the land masses. The main lines of the existing system of fold-mountains have a general agreement with the arrangement of the edges of a tetrahedron. Some striking deviations occur, but are explicable by the variations in the composition of the lithosphere, and the existence of impassive blocks of old strata which have moulded the latter movements. The lines of the old fold-mountains of the Hercynian system may have been tetrahedrally arranged, with the axes occupying different positions from those of the great Cainozoic system. So far, however, there is no completely satisfactory theory of geomorphology, for which we must wait for further information as to the distribution of land and water in successive epochs of the world's history. For the historical method promises more reliable results than the deductive method.

---

*Political Geography (Commercial).*

By J. SCOTT KELTIE, LL.D., Sec. R.G.S.

Geography, like most other departments of science, is capable of practical application to human affairs, and the application of the data of physical geography and anthropogeography to Communities, States, or Nations is Political Geography.

Physical conditions, such as position on the Earth's surface, determining seasons and climate, the surface characteristics of a region, such as its orography and hydrography, and the dimensions of the territory, all have direct bearings on the State. The question of boundaries and their definition is of vital importance in this respect, the natural limit of a neutral zone of desert, or at least waste land between two nations, gave way to the defined frontier, as often as not an arbitrary line not coincident with any natural feature, and of a validity depending on the general acceptance of the treaties by which it is defined.

The utilisation of natural resources and the amelioration of routes by land or water do much to develop a country, and bring out the real relation between land and people, which is the direct subject of political geography. The internal conditions of a country are to some extent responsible even for the forms of its government and its relations with other States. These are expressed peacefully mainly by international commerce, which takes place in spite of barriers both natural—such as seas, deserts, mountains, and artificial—such as Customs tariffs.

Internal development leads in certain circumstances to colonial expansion, and the relations of colonies to the mother country varies in accordance with the character of land and people. The rapid acquisition of foreign territory in recent years has given rise to certain new features of political geography—the sphere of influence, the leased territory, and the military occupation being the more important of these.

---

*Tirah.*

By COLONEL SIR THOMAS HOLDICH, R.E.

How the kingdom of Afghanistan came into existence. Its unstable nature and want of national vitality. The mixed elements of which it is composed. Its position as a buffer state, and the new creation of a buffer province between Afghanistan and India.

The demarcation of the boundaries of this province and the results. The reason for the late risings on the frontier as given by the people themselves. Geographical results. Up till the year 1897 we had a better knowledge of Afghanistan, Baluchistan, and Persia than we had of our own border.

The province of Roh and the Rohillas. Its position as a natural barrier to North-western India. The gateways through it, by which invasions have been conducted and the conquest of India from time to time effected. Position of Tirah in this new province of Roh. Geographical description. Nature of the roads leading into Tirah and reason for adopting the shortest line. Difficulty of passes. Description of Chagru pass and Khanki valley; of Sanpagma pass and Mashura valley; of Arhanga pass and Maidán. The richness of its soil and formation of the cultivated slopes. Terraces and houses. Population and probable fighting strength of the tribe. Conclusion—future possibilities.

---

*Sokotra.*

By MRS. THEODORE BENT.

The name of the Island of Sokotra is probably a remnant of its old name, Diu Sukutera, corrupted by the Greeks into Dioscorides. It may, as Marriette Bey suggested, represent To Nuter of the Egyptian monuments.

Though geographically African, it is politically Arabian, having from far back ages been under the rule of the Mahri Sultan, as it is now.

The principal language spoken is called Sokoterioti. Mahri, or Mehri, and Arabic are also spoken, and many words of these languages are mingled in Sokoterioti, chiefly the former. The language is very polysyllabic.

The chief mountain range is Haghier, a high-shouldered, many-peaked mass. The highest point is Jebel Bit Molek, at 4,900 feet. All but the highest needles are densely covered with vegetation, where the civet cat is the largest wild beast, unless the wild ass may be considered such.

The north of the island has many khors, or inlets, where the sea runs in a mile or more, and also many lagoons fringed with palms and mangrove, separated by sandy bars from the sea.

The rivers on the north reach the lagoons, those on the south lose themselves in the sandy plain of Noget. In many places the mountains run out to the sea. There are many streams in the mountains, but little water in the E., W., and particularly S.W. parts of the island.

Inland large flocks and herds are tended by Bedouin living in little oval houses or mountain caves, according to the season. Pasture is very plentiful. The coast villages are inhabited by mongrel races, who export ghee and sharks' fins, but little of the myrrhs, gums, aloes, or dragon's blood once so famous. There is little cultivation of gourds, jowari, and tobacco, but tea and coffee might possibly grow.

Natural vegetation assumes strange forms, as adeniums and cucumber trees, with swollen trunk, dragon's blood trees, euphorbias, etc. There were an enormous variety of non-marine molluscs. The inhabitants are peaceable and honest. We saw no traces of Christianity but a few inscribed crosses, none whatever of Greek occupation, and little of Portuguese.

---

### *The Valley of the Yangtze.*

By MRS. ISABELLA L. BISHOP, F.R.G.S.

The author recently travelled eight months in the Yangtze Valley, making a journey of 1,200 miles by land in the Province of Sze-chuan, and nearly 2,000 by water, from Cheng-tu to Shanghai, during the land journey travelling up the smaller and western branch of the Min to its source at an altitude of nearly 1,100 feet, near the Tsu-kuh-shan Pass. In the opening of the paper she briefly traced the course of the Yangtze from the sea near Shanghai to its source on the confines of the Tibetan Steppes, pointing out the magnitude and utility of the affluents which it receives after its entrance into Sze-chuan, and the access given by these waterways into the very centre of the interior. Taking the Yangtze Valley in its full geographical sense, the region watered by the Great River and its affluents, as extending westwards for about 3,000 miles, and into the very heart of Asia, Mrs. Bishop pointed out that this region must be taken as including the Provinces of Kiangsu, Anhui, Hupeh, Honan, Hunan, Kwei-chow, Kiangsi, Ganhuy, Sze-chuan, Chekiang, and parts of Yunnan, Kansuh, and Shensi, making altogether the most accessible, the richest, and the most productive portion of the Empire, with an industrious and thrifty population of from 150,000,000 to 180,000,000. After briefly alluding to the treaty ports and the great cities of the Lower Yangtze, she entered more into detail regarding the country above Ichang, the head of steam navigation, and specially as to Sze-chuan, which in virtue of its area, population, and resources, she considers the Empire Province of China. She described briefly the industries of the province, its superb climate, its vast wealth in coal and iron, its elaborately organised civilisation, and modes of communication, the increase in the growth and export of opium, and in the import of Indian yarn for home weaving, and expressed the opinion that the increasing scarcity of *cash*, the fall in the purchasing power of silver, the *likin*, and the neglect of our manufacturers to study the needs of the Chinese as to the width, weight, texture, and patterns of cotton cloth, limit and hamper trade far more than the lack of steam communication on the Upper Yangtze. She noticed the genius for combination which exists among the Chinese, and stated that in Sze-chuan, with its population estimated at from fifty to seventy millions, every occupation has its guild, except trackers and water-carriers. While recognising the fact that this province is over-populated, she considers that it has an enormous amount of wealth and prosperity, and gave, among other indications of the former, the numerous fine country mansions of a leisured class, the size and architecture of the farm-houses, the handsome bridges and fine roads presented by rich men to their localities, the splendid halls erected by the guilds, the new temples, and the magnificent charities which are liberally supported in every city. Ignorance and superstition prevail, but she believes that the hostility



shown to foreigners, who from having been "Sons of the Ocean" a few years ago, are now "Foreign Devils," "Child Eaters," and worse, is instigated and fomented by the official class for easily guessed purposes of their own. She gave her own impressions of the Chinese peasantry of the Yangtze Valley, and concluded by reminding the audience that this "sphere of influence" or "interest" extends over a third of China.

---

*Notes on a Visit to North-Eastern Kamchatka.*

By CAPTAIN G. E. H. BARRETT-HAMILTON.

The north-east of Kamchatka is as yet only imperfectly surveyed, much of the coast-line being still represented by a dotted line on the Admiralty charts. It is very rarely visited, hence the observations made and the photographs taken during the cruise of H.M.S. Linnet off the coast, in August, 1897, possess some interest. They chiefly concern the island of Karaginski, situated in 59deg. N. and 164deg. E., about twenty miles off shore, and the neighbouring village of Karaga on the mainland. The mountains of this region do not probably exceed 4,000 feet in height, and in August still showed patches of snow. The village of Karaga contains seventeen balagans, or wooden huts, raised on piles to a height of about 10 feet from the ground, and six yurts, or wooden huts covered over with turf. The population of the village probably does not exceed thirty. The people were found to be very friendly, remarkably polite, and able to converse in Russian. Mosquitoes were a plague, and the natives wear skin gloves as a protection. Dug-out canoes are in use on the mainland, but only skin boats on the island. The islanders appeared to be very few in number, and exceedingly primitive and quaint in their ways. They dressed almost exclusively in home-made skin clothing; the nether garments, as on the mainland, were boots and breeches in one. They keep reindeer and sledge-dogs.

The paper was illustrated by a series of lantern-slides from photographs taken during the visit.

---

*Twenty-eight Years in Central Australia.*

By LOUIS DE ROUGEMONT.

The author was shipwrecked in 1863 on a coral islet off the north coast of Australia, and after two years of solitude there succeeded in making a landing on the continent. Here he met a friendly tribe, who received him as one of themselves, and after some time he set out to cross by land to the east coast, aiming for the settlement of Somerset on Cape York. Not knowing of the existence of the Gulf of Carpentaria, he mistook the east coast of the Gulf for the Pacific, and, coasting northwards, eventually came back to his first landing-place, after an absence of about eighteen months. He then attempted to penetrate southward, with the hope of crossing the continent, but, baffled by the difficulties of the desert, and disheartened by being attacked more than once by parties of white men who took him for a hostile native, he gave up all hope of escape, and settled down with a native wife. He lived for over twenty years in a mountainous country near the centre of the continent.

Being without instruments or means for taking notes, he could only guess at his position by the number of days' march from place to place, checked roughly by the apparent altitude of the sun as shown by the length of shadows.

He observed that the natives of the north coast were of finer physique and greater intelligence than those of the interior, that the tribes on the coast contained more and larger families, and that they had clearly defined and

marked territories for hunting, beyond which the nomadic tribe never strayed as a whole, although individual members, provided with a peculiarly-notched stick as a passport, could pass from one territory to another. In travelling they find directions from the stars, or from certain characteristics of the ant-hills, and the habits of certain animals.

Finally, when his native friends had died during an epidemic of influenza, the author set out once more, and meeting a gold-prospecting party in Western Australia, found his way to Melbourne in 1895.

Members interested in this paper are invited to see the newspapers and other notes in the Library.

---

*Across the Sierra Madre from Mazatlan to Durango.*

By O. H. HOWARTH.

The journey now to be described was undertaken in April of the present year, over a trail which, so far as the author is aware, has not previously been described by any European. It crosses the main range of Western Mexico on a line about 120 miles south of that followed by him in 1892, and referred to in a paper communicated to the Geographical Society in 1893. The recent erection of a direct telegraph line connecting the port of Mazatlan with the city of Durango led to the exploration of this new trail, it having been otherwise impracticable for any purpose except the casual mule traffic of the natives. The line runs in a north-easterly direction from the Pacific coast between the 23rd and 24th parallels N. lat., traversing an exceedingly wild and rugged district of the main range for a distance of 130 miles in a direct line, but nearer 200 miles following the precipitous contour of the mountains. There is probably no route through the great western range of North America exhibiting such vast alterations of elevation and depression within so comparatively limited an area. From Mazatlan the route followed was by a wagon road to the village of Presidio or Villa Union (alt. 120 feet), and thence to Concordia (alt. 380 feet), Piedra Blanca (610 feet), and the little mining town of Copala (1,750 feet), which was reached on the evening of Easter Sunday. Up to this point the ascent is generally an even gradient amongst the foothills for the first 30 miles or thereabouts; but for some 70 to 80 miles further the range is constantly broken by enormous chasms which the trail traverses by repeated zigzag ascents and descents, frequently of 1,500 to 2,000 feet within a horizontal distance of two or three miles. Between the rancho of Ocotés and the cañon of the Rio Valuarte a descent of 1,750 feet was made in a couple of hours; and on the afternoon of the same day the party camped at a point 4,600 feet above this, on the first "Cumbre" or dividing ridge. Early the next morning the pass of Los Monos was entered at an elevation of 6,850 feet; and after descending again 2,000 feet to the Llanito (little plain) of Chavarria, another ridge of the Cumbre was crossed the same day at 9,600 feet altitude. Throughout this region, remarkable for the grandeur of its scenery, the main ridge of the western anticline, averaging 10,000 to 11,000 feet, seems to be split up into three or four parallel ranges with the above-mentioned deep gorges separating them. Beyond these commences a gradual descent from one to another of the curious mountain plateaus or "Llanos," including those of Las Juntas, Florida, Rusia, Mesa de Madroño, Coyotes, and Llano Grande, at altitudes from 9,100 down to 8,400 feet. These are usually open levels free from forest growth, and are utilised as grazing ground for cattle. Occasionally, on the higher of them, where a water parting occurs, may be seen a continuous stream course intersecting a plain not over a mile or so in length, at the ends of which the water is flowing in opposite directions. Beyond the Llano Grande extends a vast "mesa" or tableland covered with scattered pine and other trees for a distance of some 30 to 40 miles at an altitude of 8,000 feet. As this approaches the last hill range overlooking the great plain of Durango the ground becomes open and clear of timber, forming to all appearance an uninterrupted sweep towards the brow of the

range. Yet within a mile of this last descent the traveller finds himself suddenly on the brink of the tremendous gorge of the Rio Chico—a winding rift across the level which has to be descended to a depth of nearly 2,000 feet. Its geological structure is of great interest, exposing about half-way down a massive stream of pale grey vitreous lava, which has been covered to a depth of several hundred feet by other formations and sedimentary detritus. On reascending the opposite face and proceeding to the edge of the range the plain of Durango comes in view with the city a few miles from the foot of the last descent. This was reached on the evening of the seventh day from Mazatlan. The observations as to physical structure, temperatures, vegetation, and especially the human and animal occupants of these remote mountain fastnesses were of more than ordinary interest, presenting several features distinct from those noticed in other parts of the Western Sierras.

---

*The Use of Electric Balloon Signalling in Arctic and Antarctic Expeditions.*

By ERIC STUART BRUCE, M.A., Oxon., F.R. Met. Soc.

The absence of means of intercommunication is one of the most distressing deprivations which befalls the Arctic and Antarctic explorer. In Dr. Nansen's recent expedition, the want of some bond of communication between the drifting ship and a party leaving the vessel for only short excursions was severely felt, and greatly restricted the researches of the expedition. A means of communication would be afforded by the system of electric balloon signalling, invented by the author, adopted for war signalling purposes by the British, Belgian, and Italian Governments, and lately adapted to the wants of Arctic and Antarctic exploration. Signalling with flag or lantern from the car of an ordinary captive balloon, worked from the deck of a ship, is possible, but such a method necessitates a large balloon with its cumbersome accessories, and is therefore impracticable in Arctic expeditions. In electric balloon signalling, the signaller and most of the apparatus remain on the ground or deck of ship. Since the weight of the car, signaller, and apparatus is abolished, the balloon can be of such a moderate size as to be practical. The apparatus consists of a balloon made of a translucent material and filled with hydrogen or coal gas. In the balloon are placed several incandescent electric lamps in metallic circuit with a source of electricity on the ground or deck of ship. In the circuit on the deck is an apparatus for making and breaking contact rapidly. By varying the duration of the flashes of light in the balloon, it is possible to signal according to the Morse code. In the signalling key there are carbon contacts, renewable when worn away by sparking. The key is placed on a switch board, which is provided with a means of turning the current on to the lamps in the balloon, either through the key or directly for continuous illumination. The speed of signalling depends upon the thickness of the carbon filaments in the lamps.

The material selected for making electric balloons that are designed for Arctic work is goldbeaters' skin, which is light, strong, and retentive of hydrogen. The smallest size goldbeaters' skin balloon that would lift the lamps, and a sufficient quantity of cable to be useful, is seven feet in diameter, and having a capacity of 150 cubic feet. It takes little over one tube to fill it.

The electric incandescent lamps inside the balloon are supported one above the other on a holder made like a ladder. This form of ladder is convenient for admission into the narrow neck of the balloon.

The electric cable combines lightness, flexibility and current capacity, being made of strands of copper, both leads being enclosed in one water-proofed outer insulation. The source of electric power for lighting the lamps in the balloon would probably be the dynamo, with which every future exploring vessel will probably be provided, and which can be efficiently worked with wind or hand power. If a balloon and accessories is taken from the ship by an excursion party, light and portable storage cells can be used. The gas



for filling the balloons can be compressed in steel cylinders, or a portable apparatus can be used for making the hydrogen on the spot.

This system of signalling makes the signallers fairly independent of the configuration of the country. An electric balloon ascending from the deck of the exploring vessel would not only act as a beacon guide to exploring parties, but would flash signals relating to the drift of the ship or any other desirable communication. If an exploring party could take another balloon with them, complete intercourse could be established. If the *Fram* had had an electric balloon afloat, it would have been probably seen by Dr. Nansen when he was returning from his journey north, and possibly a long and perilous march might have been avoided. An electric balloon would have been an important addition to an Arctic station such as Elmwood.

The electric balloon has been successfully manipulated, not only in calm and fair weather, but in half a gale, a snowstorm and mist; signals have been read and answered in spite of these adverse atmospherical conditions. Arctic records, however, include a large proportion of still and clear weather.

Continuously illuminated, and sent up a short distance from the ship, the balloon would also be serviceable as a light for working parties, because of the diffusion of light from the large surface.

Regarding the distance to which signals may be transmitted, it is reasonable to expect that, given a sufficient altitude, a high candle power and a clear atmosphere, through a telescope the flashes would be visible some 80 or even 100 miles.

---

### *The Prospect of Antarctic Research.*

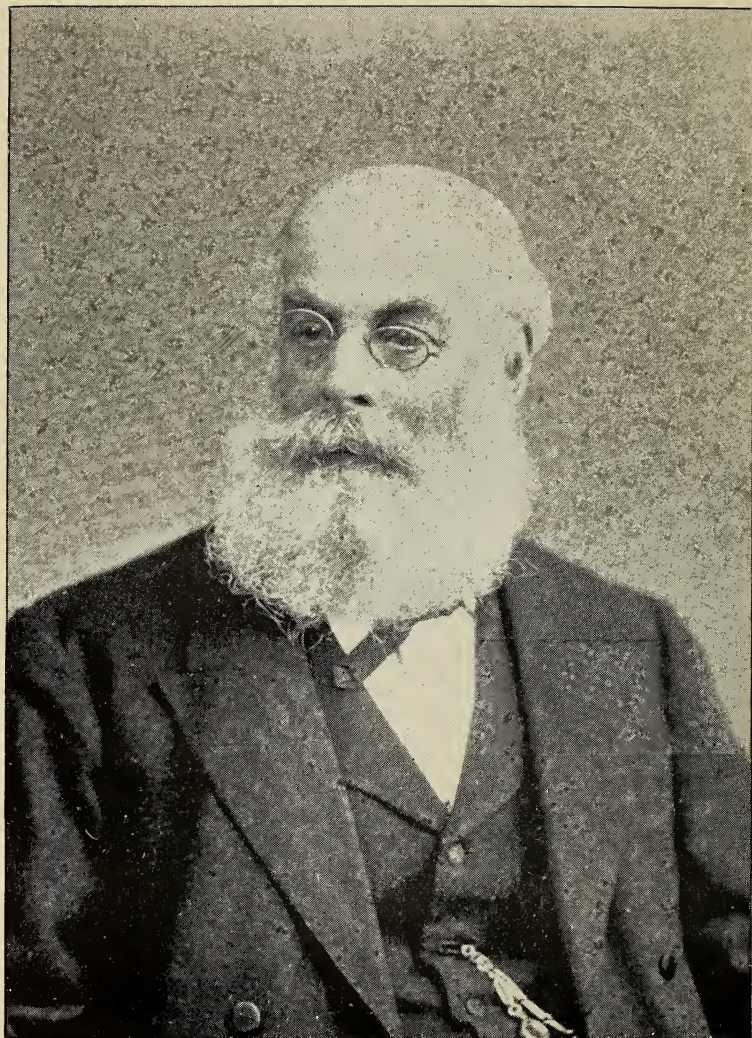
By HUGH ROBERT MILL, D.Sc., F.R.S.E.

In the history of Antarctic exploration the problem has varied in the course of the centuries from the purely theoretical discussion of the possibility of antipodes, to the search for a vast Austral continent of value to colonists and commerce. Since the voyage of Cook confined the limits of Antarctica to the south frigid zone, and the efforts of the few whalers and sealers of the early part of the present century proved that it could not rival the Arctic regions as a hunting-ground, the problem has become purely a scientific one.

As a field for scientific research the Antarctic has been kept before the public by Dr. Neumayer, of Hamburg, for thirty years, and in recent years Sir John Murray and Sir Clements Markham have been indefatigable in pressing upon successive governments the claims of this region for a national expedition. The Royal Society, the Royal Geographical Society, and the British Association have given their powerful interest to the movement, but in vain.

The immediate prospects of research are more favourable than the action of government might imply. A small Belgian expedition with a band of scientific enthusiasts is now in the field, and Sir George Newnes has sent out the *Southern Cross* with Mr. Borchgrevink to make an attempt to traverse the ice-cap from Cape Adare. The results of this expedition may be valuable, but they can only be viewed as preliminary. A German Committee has completed arrangements for sending out a finely-equipped expedition under Dr. Erich von Drygalski in 1900, and the Royal Geographical Society has headed a subscription list for a British expedition with £5,000. It is urgently important that the great expeditions now being organised should not be in any sense rival projects; but that they should work in harmony so as to make the greatest possible number of simultaneous and comparable observations on such important and little known phenomena as the meteorology and magnetic conditions of the south polar area. The preliminary results of the expeditions already at work will probably arrive in time to enable the plans of the larger enterprises to be laid with greater certainty than our present knowledge of the region will allow.





By Permission of

MESSRS. MAULL AND FOX.

REV. S. A. STEINTAL, F.R.G.S., F.L.I.NST.  
A Vice-President of the Society and Chairman of the Council.



# THE JOURNAL

OF THE

## MANCHESTER GEOGRAPHICAL SOCIETY.

---

### BRAZIL IN 1898.

By MR. JOHN MACLAIR BORASTON.

[Addressed to the Society, in the Library, February 15th, 1899.]

I EMBARKED in the Royal Mail steamer "Thames," at Southampton, on the 18th March, 1898, upon my fourth visit to Brazil.

Touching at Cherbourg the first night out, and seeing little more of it than the long line of lights upon its 4,500 feet of breakwater, we run down Channel, cross the much-maligned Bay of Biscay in a bee-line, and turning the corner at Finisterre, arrive at Vigo at noon on the second day out.

Vigo is the port of Galicia, and here we take on board some fifty or sixty Gallegos, the fortnightly instalment of a continuous emigration from Spain to the River Plate. They are all peasants, and of the poorest. The dust on their boots—if they have any—represents a long tramp from the villages lying inside, for the few pounds requisite to pay their passage out leave little for the luxury of railway travelling. The men and boys appear in coloured cotton shirts and cloth trousers, into which patches of half-a-dozen different fabrics have been let, producing a variety among which the original material plays an inconspicuous part. Many wear a black cinta or sash at the waist, which serves the double office of a girdle and a receptacle for anything their wearers cannot conveniently carry otherwise, such as half-eaten pieces of bread and cheese, packs of playing cards, and packets of cigarettes, etc. Most of them wear dark blue caps, in form something like those of the Geneva divines of the days of Melanchthon. One arrives in new carpet slippers, but his funds evidently failed to replace his perforated hat; others in new caps, but with no foot-gear at all. Brass rings and cheap chains are much in evidence. Each carries his belongings in a coloured cotton handkerchief.

They brought with them a couple of sacks containing long, thin black puddings and bread, the latter in flat cakes of seven or eight pounds apiece, with cinders at the bottom, and of the colour and consistency of Pará rubber.

Among these emigrants was one we christened the "Duke." He had a deck-chair of his own, a cotton hammock, and an umbrella. Inside his shirt he kept a chain purse, attached to a nickel chain,

VOL. XIV.—Nos. 10-12—OCT. TO DEC., 1898.

fastened about his neck. In this he guarded his money and such odd silver coins as his impecunious brethren entrusted to his care. I think they imagined a man with a deck-chair, hammock, and umbrella of his own to be a sort of natural banker, beyond the reach of the cupidity which might assail less fortunate mortals.

The "Duke" also possessed a box, which seemed to be the ark of the covenant of this transatlantic exodus. It contained packets of tobacco, lemons, tins of sardines, etc., and the latter they ate with the india-rubber bread to the neglect of the fare provided by the Royal Mail, which they bagged away against the time when sardines should cease, and lemons be no more.

The women gave the men points in the variety of their habiliments. There was a lady before me as I wrote. Her dress was of a sort of wall-paper chintz, her stockings high rose colour, innocent of boots, a sulphur-coloured woollen shawl covered her shoulders, and a sky-blue kerchief her head.

Altogether they were the happiest creatures I have ever met, and probably the laziest. They lay on the main hatch the whole day, or squatted there, playing cards and smoking cigarettes. If the latter went out, and nobody happened to be lighting up, the smoker put the half-smoked stump behind his ear. When the "Duke" lighted up, there was a general rekindling of the stumps alone.

They were natural musicians, and when sunset began to confuse the kings with the knaves, the note of a guitar, mandoline, or accordion sufficed to draw every mother's son of them into the silent circle which surrounded the performer, perfect surrender depicted on their faces.

It was a strange music, strange in its intervals, its capricious rhythm, and its capacity for ending on almost any note in the octave but the tonic. When one man became tired of playing, he passed the instrument on to the next. Sometimes two of them danced to it, the others clapping hands to the rhythm of the music. The intervals between the pieces were utilised to run off the superfluous nervous energy in cries of "God save Spain! God save the Argentine Republic! God save the Royal Mail!" for this happy-go-lucky creature blesses not only the place whence he comes and the place whither he goes, but also the means of his going, being himself unquestionably thrice blessed in the possession of such a happy temperament.

During the few listless moments that followed some single voice led off the first bars of a melody, and in a moment it caught like fire, and the ship rang to the spontaneous burst of song.

But early to bed and early to rise was the Gallegos' habit, if a man can be said to rise who never got up from the deck during the day, or went to bed by merely continuing to lie there during the night. Going to bed meant little more than wrapping themselves up by twos in the same blanket, still singing as they lay face to face, their eyes fixed in a sort of musical ecstasy upon those of their bedfellows.

The "Duke" folded up his deck-chair, abdicated the position where he sat enthroned upon the main-hatch all the day, and climbed into his hammock, slung between two stanchions, still hugging his umbrella. Then the singing died gradually away, silence sank on all, and if any Gallego lay awake, he heard but the steady swish of the water abeam, bearing him on to his far-off fortune in the west.

I was at first disposed to pity the Gallego. I soon recognised the superfluosness of such a sentiment. The Gallego is a man stronger than his fate, and that from sheer simplicity of nature. He is always poor, generally happy, and appears to be as little conscious of the one fact as of the other. The globe-trotter looking down from the bridge may well ask himself—What am I that I should pity?

On the early morning of the third day one wakes up in the Tagus, the golden Tagus, as their poets call it. The Tagus is not golden, but it is a good, broad, serviceable river as far as Lisbon, which gradually appears on the left bank twelve miles from the mouth.

When, later on, the sun lifted the morning mist from land and water, one could well understand that the city as seen from the river has been called beautiful, just as the river as seen from the city has been called golden.

Lisbon from the river is beautiful. An abruptly rising shore, from which a gigantic slice slid with sixty thousand of the inhabitants into the Tagus in the awful earthquake of 1755, is terraced with irregular lines and clusters of tall, white edifices, culminating in the eminence called *The Mount*, and terminating at the water's edge in a long line of stone quays, overlooked by many-windowed wharves. There is a brilliancy about this white city, with its red-tiled roofs, veined and dotted with lines and clumps of vegetation, and set in an amphitheatre of green rolling hills.

Lisbon is blessed with a supply of superlative water, conveyed to it by an aqueduct ten miles in length, which, near the city, spans a valley 2,500 feet wide by 30 gigantic arches 240 feet high, the aqueduct having here a width of 110 feet.

Our share of the water comes off in a water-boat, and is pumped aboard by indefatigable gentlemen with wide-awake hats and mutton-chop whiskers.

It is a notable thing that the Portuguese have always been great in the matter of waterworks. The aqueducts at Rio de Janeiro, constructed in the time of the Portuguese occupation, are fine solid pieces of work.

The men with the water do not swear, at least only occasionally, but the men who come out with the coal-lighters, or with those containing the usual exports of wine, lemons, onions, dried cod in leathery slabs, and wooden toothpicks—the last an exclusively Portuguese industry—never ceased swearing. People who do not know them think there is a small shipwreck going on, a boat-race, water-polo heat, or some such soul-stirring event, but as a matter of fact it is only an exchange of nautical amenities between the crews of a couple of lighters, one of which has run its nose deftly in between the steamer and the other lighter. As the crew of the latter will not get a chance of discharging for an hour or so, they employ the interval in searching the noble Lusitanian tongue for adequate expression of their feelings, calling heaven, earth, and the third officer to witness the iniquity of things in general.

This was very entertaining for those on board, and as such vapouring is a necessity of the Portuguese temperament, it was no doubt in a way entertaining for them also.

In the late afternoon the anchor is lifted, and the boat sets off down



the river, the white-faced houses falling back among the hills. Here and there a sleepy little fishing village showed an early light, and the thrifty windmills grind away in solitude upon the ridges, where they catch all winds both day and night. At the mouth of the river rocky Cintra rose darkly on the right, with its burden of lemon trees and vines, and the sun touched it into rugged beauty with the last pencils of its waning light. This was the last we shall see of Europe for many a day, and it is a fitting adieu.

The traveller, on quitting home, consoles himself with the thought that he is still in his native land, and upon leaving this, that he is still in Europe; but probably only passing from the world entirely would widen his sympathies sufficiently to bring the whole globe into the shadow of his own fig tree.

One falls short of this universal standard as the steady white light upon Cape Roca glows ever more dim and low, until it sinks beneath the water, and the boat heads out to the Atlantic, with five days' run to the half-way house—St. Vincent. (Windward Islands.)

At daybreak, on the 26th March, we were running up between the dark rocky walls of the coast of St. Antonio, on the left, and of the equally gloomy St. Vincent, on the right. The lighthouse stands on a solitary snag of rock, off the mouth of the harbour, and passing round the back of this, we entered the all but closed circle of the bay of St. Vincent.

Sombre masses of grey rock, the inclined strata of which record the turbulent youth of these volcanic islands, encircle the bay like the ragged edge of some great crater. No rain comes to soften the sharp angles of their abrupt cones and sudden intervals, which lie in all the bald asperity of land heaved by nether fires to bake in barren nakedness beneath the tropical sun. On the right of the town is a level strip of ground covered with sand where sparse scrub grows, and probably formed by some more recent flow of lava levelling up the bed of the valley upon which it opens. This scrub, and low, dry thickets of acacia, are all the vegetation of which the district can boast, unless it be a rapid surface growth which immediately responds to the rare rain which falls during a few days of the year, and, withering at once, leaves a stock of dry fodder for the goats and cattle, which are bred in the islands. No animals of note exist there in a natural state, and grasshoppers and lizards, the companions of desolation, have the place pretty much to themselves.

At the head of the bay St. Vincent occupies a narrow strip of shore, which rises immediately in a chain of irregular hills behind, and beyond these rises the broad table-topped mountain, which dominates town and bay, and the lofty summit of which is seldom wholly free from clouds.

St. Vincent is all but exclusively a coaling and telegraphic station, and forms the point where the African and South American service of steamer and cable part company. Its population is largely black and half-breed. The place produces practically nothing, the coal and all necessities of life being imported. On visiting the market place I found one cabbage on sale, a butcher had half a sheep and two bones, firewood was selling in bundles of half a dozen small sticks, and coal in similarly infinitesimal quantities.

At the school, mainly attended by negro boys, the master was allowing them to spell cat (*gato*) with two t's.

The School Board must be in a bad way in St. Vincent. The inspector, if they have one, should have hired one of the sundry craft which came out to meet us ere we had well cast anchor. He would have found a better attendance there than on shore.

"I say, trow the monney in de watter!" greeted me in English as I put my head through the port to see what the uproar was about, and as the others heard the invitation, a dozen boats dashed up, their occupants standing up in them and out-yelling one another in their exhortations to "trow it dis side!"

Drop a coin, and in a second a dozen young bodies shoot down into the water to catch it as it sinks in the sea, and after a submarine scuffle they rise again, their glossy brown bodies shining like Florentine bronzes in the blue sunlit waters. The capturer of the coin safely pockets it in his mouth.

The boys ranged anywhere from six years of age to twenty. They wore very little clothing. It was something like a pair of bathing pants, only smaller. They laid hold of any end of ship's tackle, and hauled themselves up to the rail. Then they let one drop a coin and count twenty ere they dived for it. I never saw silver missed yet; they are rather down on copper. They can tell a button from the genuine article in five fathoms of water. They dived down one side of the ship and, passing beneath, come up on the other. They seemed to prefer to swim with their heads under water; they get along quicker. The performance, which included turning the boats upside down and working them round and round like mice on a wheel, ended with a battle royal between the smallest couple of the group. They entered the water, and swimming straight up to one another, turned a somersault in it, slashing one leg down upon their opponent as they come over. They dodged and ducked and chevied one another.

One frequently hears that sharks will not attack the blacks. I have seen a good deal of this marine sky-larking at the islands lying off the African coast, and although they are invariably infested by sharks, I never witnessed the slightest hesitancy on the part of a black to enter the water, or heard of one being attacked. On the contrary, a shark appeared on this occasion at a short distance from the vessel, and the blacks gave it chase in their boats, harpooning it with the blades of their oars. When they had lost sight of it, they returned and resumed diving operations.

As we steamed out of the bay, having coaled in the meanwhile, the scene was one of indescribable tumult, the oarsmen keeping pace with the vessel, the divers yelling and counter-yelling in a frantic effort to elicit a last shilling. At last they had to fall astern, and the "goodee bye," with which they dismissed us, testified to their satisfaction at the numerous shillings and sixpences lying at the bottom of their boats. I used to hear those niggers for days after in mid-ocean. Probably they followed us under water.

I tried to photograph some of them. I singled out my boat, and followed it round and about with the camera on the cock until I became quite giddy. In the end I snapped it on a chance focus, and with a feeling that I had got them somewhere in the field.

Upon developing the plate six months after, I felt disappointed. But in time I got to like that picture. There is such suggestiveness about it. You can tell what a pack of fiends must be in the other halves of those boats. I took another plate at the same time. It is all sea.

As we came out between the two islands, we ran close to a whale waging a combat of a different sort. It was being attacked by a thrasher and a swordfish. The thrasher, as its name implies, thrashes the whale by striking it from above; the swordfish does the more deadly work by piercing it with its sword from below. The thrasher and swordfish have a mutual understanding in the matter of whales. They work jointly, and are said never to quit a whale until it is dead. As they do nothing with it when it is dead, they evidently work from pure motives—pure hate, I mean. I do not know what these whale-baiting gentlemen do when they have made an end of the whale, but as neither of them wants it, discord is obviated, and no doubt they proceed in a friendly way to hunt up another.

The officer who gave me these details, told the stout lady, who lived in my street on board, that her sickness was due to the fact that we were climbing up to the line, but that after passing it, we should be going downhill, so to say, and she would soon recover. As the south-east tradé winds broke on us with some violence whilst passing the equatorial ridge, I am unable to adduce the fulfilment of this prophecy as a credential for the same officer's statement regarding the fishy triad.

For my own part, I saw two great yellow flappers continually rise out of the sea, upon which they beat with great force, sending the white spray into the air, whilst the repeated spurt of vapoury water from the harassed whale seemed to indicate that he was getting short of breath.

I felt sorry for that whale. Like certain big fish in other waters, whales seem to help themselves by right divine to a shoal of their smaller brethren whenever they feel so disposed; still, one does not like to think of their being done to death by a couple of spiteful cut-throats like the thrasher and swordfish. Let us hope that they all killed each other, and that it will be a lesson to the rest.

We passed the island of Fernando Noronha at noon on the 29th March in the teeth of the south-east trades, which opened with their usual energy, bringing up big running seas. It is the Brazilian penal settlement, lying some 350 miles north-east of Pernambuco.

During the afternoon the sky blackened ahead, the darkness circling round the horizon on both hands, until the whole heaven was overcast. Bands of rain appeared at one point after another, gradually uniting to form a continuous grey wall between sea and sky. There was something uncanny in the gradual advance of this gloomy wall of falling water on every hand, turning the sea leaden-hued behind it, and narrowing every moment the free circle of darker water surrounding the vessel. At last the wind, as if hemmed in, began to chop in all directions, until seemingly finding a vent in the grey wall, it burst away to the north-west, whistling in the cordage like a pack of elemental fiends. At once the wall closed up, and torrential rain flooded the decks. During the night, and following day, the winds



increased, and the sea ran high, at times submerging the main deck, and making the promenade deck uninhabitable. With the bowsprit trying to harpoon the Southern Cross at one moment, and attempting to take the ship's soundings the next, one began to feel as if one had no right there. "Trespassers will be executed" seemed to hang all round the sky, and one thought of one's relations and wondered how many days it would take to swim to the nearest port. I was walking about in a waterproof and top boots, when I observed half-a-dozen wicker-work arm-chairs come waltzing down the promenade deck on the wings of the wind. They were animated, as one might say, by a perfectly natural impulse, but being timed to meet an old gentleman just then emerging from between the deck houses, they fouled him most naturally. He received the first chair with pained surprise, the second with mild reproof, the third called forth vigorous protest, he helped the fourth on its wind-borne flight, the fifth he "downed" with his knees, and when last I saw him he was chasing the sixth right away aft, the said chair having dodged him, and bidding fair to get off scot free. He afterwards came to me in the smoke-room, and said wicker chairs were the curse of modern civilisation.

The evening before we reached Pernambuco it was buzzed about at dinner that a vessel was coming up, probably the homeward-bound Royal Mail. Dinner broke off at the roast, and the rail was soon lined by people waiting, glass in hand, to scan this fellow-wanderer on the deep.

On she came, heading closer in, until we can see the deck lights above, and the glimmer of the ports below, and descry all the well-known ways and by-ways in the bright little city floating through the night.

Then the rocket signal is fired from the bridge, ten pale-blue stars rising and falling on a low curve like ten tears of longing, followed by a large crimson star that sinks straight and slow like a drop of warm blood to the sea, and is made cold. The same signal responds from the bridge of our own boat amid intense silence.

The two boats are abreast for a moment. No one speaks. It is as if a current of intense feeling were playing silently between them on a closed circuit. Gradually they draw apart, but cannot go without a spoken word.

Fainter than we expected, for the distance is greater than it appears, comes the three times three across the waste of waters. It is the cheer of the homeward-bound, and the cry of Ishmael goes back to it three times three for all the lump in his throat. Women blow their noses, and make no secret of watching the "dear old thing" out of sight; but the men break up, and turn their backs on it, only to sneak astern under cover of the deck-houses, and meet each other shamefacedly in what they thought to be a solitary spot of vantage for a last look.

Soon only a glimmer remained low down on the water; then that sinks, too, and memories which seemed to rise into actuality for a moment, become memories again. We got up on the morning of the 1st April to see the low-lying coast of Pernambuco state edging the

horizon, and during the morning anchored about a mile outside the reef in the open sea.

This reef, from which the older portion of the city receives its name, Recife, forms a continuous strip several miles long, parallel with the shore, and at a distance of ten minutes' row from the latter. It acts as a solid breakwater against the heavy swell of the Atlantic, forced up by the shallowing bed into great white rollers, which burst upon it with thunderous roar, hurling the spray to a height of anything between ten and forty feet. There is an opening at the north end of the strip, through which coasting vessels and some of the smaller transatlantic boats enter the long channel of still water lying inside the reef. The larger boats, however, deliver you in the high seas to the tender mercy of an open boat, manned by six men. As the great rollers will lift and drop the small boat through ten or twelve feet in fewer seconds, one is liable to get swamped whilst waiting on the ladder to get into her, or to be left hanging between the steamer and a shark-infested sea, if one fails to seize the exact moment when the boat rises to the ladder.

Assuming you have effected the transit safely, your six men row for all they are worth toward the opening at the head of the reef, the great rollers holding you poised at one moment upon their crests, and walling you up fore and aft the next.

If you travel with a violin, do not place it in the sun to be out of the way of the water, or when you come to pass it through the Customs the Philistine will smile. The official asked if mine were new, and therefore dutiable. I replied with some pride that it was a hundred and forty years old, and opening the case, exposed the *dissecta membra* of a quondam Klotz, whose sole remaining bond of union was its own contorted strings.

Whilst being projected shoreward, you will probably be startled by suddenly coming upon a man sitting upon a small stool on the top of a wave. It makes a pretty sight as you enter the trough of the wave upon which he has just risen, to see him projected some forty degrees above the sky line. You will find as you get nearer that his stool is fixed to five lengths of peeled saplings, lashed together to form a small raft, which goes by the name of *jangada*, and is practically the same structure as the catamaran of the East. He appears quite cool and comfortable, and quickly corrects his violent course by a stroke of his paddle, now on this, now on that side of the *jangada*. You are both making for the opening in the reef, and whilst your six men pull might and main in the thick of the surf, your companion mounts a huge wave, sets the nose of his uncapsizable *jangada* dead in the race, and shoots the surf. He has probably come from some distance down the coast, and being too lazy to paddle in the still water inside the reef, has got the Atlantic to do his paddling for him.

I have often passed these *jangadas* at sea miles from land.

The lighthouse and fort occupy the extremity of the reef, and as soon as this is doubled, the water is still, and half a mile of vessels of all nationalities lie along the lagoon-like channel within.

There is, beside the fort and lighthouse, a solitary structure about a mile up the reef, called the Casa de Banhos, or Bath House. It is entirely of wood, and built on piles, cemented into the reef. The sea,

which clears the reef at high tide, roars beneath it, and it is open to every wind of heaven. It does everything but float, and the proprietor reassures new comers by the remark that if ever the sea washes the reef away, it will wash Pernambuco away also. The establishment is really what it is called, a bathing house, and boats full of people come off at sunrise and sundown for a dip in the square pits which have been hewn in the reef, and are filled by the tide.

An Englishman once went there to bathe, and nothing could drag him back to his lodging on shore. He rowed across with his trunks, and said he had come to stay. Since then, most Europeans, on a passing visit, put up at the Bath House.

When I got into my room I felt a little cramped. My own trunks formed the principal pieces of furniture, and occupied all the walking space. I tried to photograph that room to amuse myself in my old age, but when I set the camera in the doorway, I found I could only take the window; and when I set it in the window, I could get nothing in the field of view but the door; and so I gave it up, and went outside, and took the whole house.

The rooms are about twelve feet by eight, but as all the partitions stop about six feet short of the corrugated iron roof, each person gets the benefit of the upper half of the rooms of everybody else on the same floor. This is very handy for conversation with a friend about ten rooms away.

There are some rats in that house. Some is a safe word for anything under six thousand. There are also some wrecked vessels outside. When a boat gets too old to work or is otherwise disabled, the authorities have it towed up the harbour into the shallows opposite the Bath House, make a hole in it, and it lies over, blocking the way for evermore. When the rats see this, they make for something with the top side up. The Bath House being the nearest structure fulfilling the conditions, there have congregated there rats representing every flag in the mercantile marine. It is a sort of international rat congress, and high session comes off about midnight. They chevy one another up and down the piles and posts; they meet on the top of the partitions, and dispute the right of way; they scutter over the iron roof as if all the cats of Kilkenny were on their track, and the squeaking is something heartrending. But you soon get used to them, and what with the wind howling through a house with as much window and door space as all the wall surface put together, and the sea pounding away beneath you, you waken in the night, and wonder why the ship has stopped.

After Ceará, Pernambuco is the healthiest place on the Brazil coast north of Rio, but nowhere else can one find anything to equal the Bath House as a safe retreat for thick northern blood, in a land where fever is seldom or never absent.

I should think there is not in the world a finer sea than that which breaks on the Pernambuco reef. Already, miles outside, the great waves formed by the ground swell give earnest of the surf they will produce if baulked. Long before they reach the reef the lessening fathomage renders them top-heavy, and they topple over and break on themselves in enormous white rollers. At high tide four or five of these foaming waves are continuously in view, and as each strikes



the reef it rears and curls, then crashes like a boom of thunder on the rocky breakwater, and flushing the reef at a sweep, flows over into the interior channel. The spray has been flung in my face when standing on the fort, forty feet above the sea. When the full moon brings up the big tides the sight is one not to be forgotten.

In order to get some idea of the place, imagine we are standing on the balcony running round the four sides of the Bath House, and upon that side of it facing east toward the open sea. Looking on the left hand, the eye travels a mile along the brown level surface of the reef, which stands dry at ebb, without meeting any obstacle until it strikes the fort and lighthouse at the northern extremity.

The reef, as may be seen in the baths hewn in the rock outside the Bath House, is composed of obscurely stratified sandstone, and it forms part of a discontinuous structure fringing the coast from above Pernambuco down to Bahia, in the south. The sea currents here tend to throw up sandbanks, and Pernambuco city is built upon two such spits of sand, separated by channels of salt water, and upon the mainland beyond. In the case of the reef, however, the friable sandstone has been knit compactly together by the percolation of calcareous matter, then heaved to the surface of the water. Even so, its inner texture could have afforded little protection against the ceaseless onslaught of the surf, had not the tiny *Serpulæ* undertaken to make it their home. The growth and death of their little shells have left their record in a hard surface coating of calcareous matter some few inches thick, upon which the surf beats ineffectually, there being no tradition of change in the form of the reef.

Letting the eye follow the sea line from the northern extremity of the reef toward the right, you observe the anchorage of the larger boats about a mile or two outside. Still following the sea line the half-circle is completed which bounds the open sea without meeting any object save sky and water.

This brings the eye again to the reef on the right hand, where, at a similar distance to that of the northern opening, you can just discern the sea cutting through a smaller opening to the south, available only, however, for jangadas. Changing the position to the right-hand balcony, you observe the *Ilha de Pina* is a very low, sandy island covered with the sand-loving cocoanut palm, and screening the shore line of the mainland, which enters behind it from the south. The island is uninhabited, save for a few fisher huts and a hospital, whither the sick are transported generally to die at the hand of neglect and incompetence.

Behind this island is the mouth of the River Capibaribe, which, with the Limoeiro railway, serves to tap the sugar, cotton, wood, and hide industry of the northern portion of the State.

Still toward the right, the mainland is seen in the *varzea* or level ground lying between the shore and the low hills rising toward Jaboatão. At the right hand of this view you reach the extremity of the city where is the railway station. The commencement of the city is marked by the railway station. This is followed by a line of works and wharves continuously. Little else strikes your notice among the long row of whitewashed, or lightly tinted, red-tiled buildings lining the shore and filling in the whole western prospect,

until the square tower of the church of the Espirito Santo rises, surmounted by the semaphore, and serving as signalling station for the port. The city still continues a little further toward the north, but at this point a good iron bridge on stone pillars crosses the channel, connecting the shore with the strip of land lying between it and the reef, and called the Lingueta. This is the principal centre of commerce. An extensive block of yellow-coloured buildings, the double towers of which appear above the hulk in the view, form the Customs' House, which, with a line of wharves, occupies the left side of the harbour, the right side of which is formed by the reef. This brings you back to the fort and lighthouse whence you started upon the circular survey.

As Pernambuco is 8 degrees south of the equator, the sun rises and sets a short time before or after six o'clock, according to the season. The city, as seen from the Bath House at sunset, is a striking spectacle, the quaint roofs and turrets standing off dead black against a sky passing in a short space of time from pale gold through every intermediate tint to the deep purple which precedes the quick darkness. The beautiful hues are no doubt to be attributed to the moisture condensing above the swampy tract lying west of the city.

After dinner residents at the Bath House begin to feel the limitations of their position. A boat passes every half hour to the shore; but there is nothing to do when we get there, and we may as well stay on the reef.

Pernambuco is a serious commercial city, with creditable traditions in this respect, but socially it is one of the most backward places on the coast. The English colony, living at villa residences in the suburb of Magdalena, visit each other turn and turn about, and make things as lively as they can by maintaining tennis and cricket clubs, and an English church, the bell of which must on no account be rung. The natives generally go home, dine, and go to bed.

There is perhaps some excuse for this, as the day for a Brazilian begins at six in the morning. He rises, sips a chicara of black coffee, and smokes a cigarette, which lasts him until 9-30 a.m., when almoço, a substantial knife and fork breakfast, is served. That supplies the energy for the day. Six o'clock jantar, or dinner, closes the refectory.

The Brazilian is abstemious in diet, and seldom drinks anything but water. Still, as a race, they are almost universally anæmic and dyspeptic. Neurotic disorders are common.

Supposing that wind, wave, and midnight rats have no further affected your slumbers than should be the case with a fairly healthy Englishman, you probably rise at six a.m., and go for a morning dip. It would be as well to have a look round before going in, because I once looked round after coming out, and pulled out a fair-sized cuttle-fish. I told the proprietor. He said there were plenty of them washed up by the tide. I hung that cuttle-fish by the cap on a post as an awful warning, and watched the curious vascular flushing of the under-parts of its body.

The proprietor is a very economical man. He served the cuttle-fish up for dinner the same night. He said, whilst some of us examined pieces on our forks, that if we were attacked by this animal, we

should pay no heed to the long tentacles with which it seizes on and draws itself up to its victim, but lay hold of and turn inside out the large flabby hood which the creature uses in the manner of a cupping-glass, and which, once it closes on the body, only the death blow will cause to relax. We promised to do so.

At coffee you will have choice of two daily papers. It does not matter which you patronise. Both have means of obtaining information with prophetic rapidity. You will probably discover that the Spaniards sank the American navy the day before in mid-ocean, and thence proceeded to annex New York. The number of ships involved, details of the fighting, and the tale of killed and captured are given with conscientious care. This proves that the man who arrived at the Bath House from Europe the day before, and said that war had not yet commenced, because the combatants could not find one another, must have been misinformed. In another column you read that Sir Ewart Gladstone, the illustrious Whig leader, is now dead, this being the third and probably final demise during a fortnight of a statesman whom Europe still supposes to be living. All this is very cheering, and makes one feel what a force journalism is in proper hands.

The bell tinkles, and you enter the boat to be ferried ashore. Among the first things that strike you are the Pernambuco ox-carts, long, low, narrow trollies, rolling on solid wooden wheels, drawn by oxen yoked and belled.

You meet people of every shade of colour that can be produced by the promiscuous intermixture of the African negro, the indigenous Caboclo, and the descendants of the Portuguese settlers. There is no sign of the bitter colour feeling which exists in North America, but the intermixture of races is undoubtedly to be attributed to the vices rather than to the virtues of the white man. As a rule colour marries colour, and white marries white, or only oversteps the line into some neighbouring shade. It is not unusual to find a black occupying a position of some consideration in the Government offices. For a negro, however, to call a negro black is unpardonable.

Passing over the bridge leading to the Lingueta, you are accosted by a goodly number of the blind, halt, and otherwise deformed, soliciting alms or the purchase of a lottery ticket. This is allowed by the Government in the absence of any organised charitable institutions, and it is answerable for the public exhibition of some of the most disgusting objects of deformity and disease which it has ever been my lot to witness. It is also answerable for a more pernicious evil in the countenance it gives to the public lotteries. These are mainly supported by the poorer classes, and go by the appropriate name of the "jogo do bicho," the game of the beast. It is so called on account of the figures of animals which are stamped upon the tickets for their illiterate purchasers, who spend a large portion of their time in discussing the relative merits of lion and tiger, cock and alligator, as mediums for the acquisition of sudden fortune. The vice is firmly rooted among the class least able to meet the demands it makes on their means, and most prone to excess as a result either of success or ill-success.

Immediately contiguous to the bridge is the Customs' House, and you enter it with a view of extracting your baggage. You make known your wants, and are informed that the Customs does not open



until ten o'clock. You go back at two, and are told that it closes at one. You turn up to-morrow at 10 a.m., and learn that the conferente does not despatch till one. You return at one, and they require you to pay duty on two dozen shirts, because it is inconceivable that any human being should carry that number unless he wished to sell them. You protest, and go to see the inspector. Everybody smokes and spits all over the place out of pure pride of office, and you feel that liberal ideas prevail; but as you are entering the inspector's room, a man hauls you back as if he thought you were an assassin. The inspector only receives for two hours daily. At last you get in by backsheesh methods, and the inspector takes note of your troubles. He will think over them for a fortnight, and then take another fortnight to forget them. In the meanwhile the conferente is changed every week, lest he should have time to form smuggling combinations, and you have the prospect of indefinite explanation and contention with officials who change with more than lunar frequency. In the end you pay up in despair, and vow that the Brazilian Government is a pack of ill-mannered thieves, which is a mild statement of the case.

Proceeding up the Rua do Marques de Olinda, and barely escaping having your legs cut off by the footboards of trams which project from the narrow road over the footpaths, you arrive at the Lingueta proper, a flagged open space shaded by great trees, facing the harbour. Here is the little line of offices belonging mostly to English brokers, who boast that they seldom make less than a thousand a day between them. Here is also the principal restaurant, where the kitchen range and an open lavatory dwell contentedly side by side, and the brokers at lunch probably look upon this as a necessary set-off against the thousand a day. This end of the Lingueta is full of Englishmen, "on the cable" or "in the bank," as the phrases go. The tropics seem to try the natural dryness of the Anglo-Saxon palate. Pernambuco forms no exception to the rule.

Food is cheap in Pernambuco. Men mounted on little bony horses with great net-covered panniers on each side, sell live fowls at sixpence apiece. Sucking pig is a favourite dish. They do not cry them in the streets. The man comes to the door, which is generally open, and pulls the suckling's tail, the household being immediately apprised of his intentions. They bring spruce little horses on to the Lingueta, and knock them down for forty shillings each. If any one is going away by steamer to the next province, a crowd of relatives and friends come down to the Lingueta in broken-down carriages, top hats, and patent leather boots, and the women cry, and the men embrace and kiss one another, and altogether it is quite a dismal entertainment. Everybody who has nothing to do comes and sits on the Lingueta. If you lose a dog, you will generally find it on the Lingueta. Groups of green parrots shriek from the bottom of their hearts. Occasionally an armadillo appears, looking as if it had walked out of the pages of a palæontological treatise, and did not know what to make of these last times. I obtained here from a matuto a beetle of the *Hercules* (*Dynastes*) species, measuring  $5\frac{1}{4}$  inches from the proboscis to the end of the body.

Returning by the only means of connection—the bridge—by continuing straight inland along the Rua do Imperador, we find that

the city is cut longitudinally by two great arms of salt water, each spanned by a series of bridges.

Upon the bank of the first of these channels stands the domed edifice of the Congresso. Next to it is the School of Fine Arts. In the immediate neighbourhood are the Governor's Palace and the theatre. Only occasional performances take place in the latter, and those are given by passing companies of indifferent quality. Passing to the south side of the city, the church of Nossa Senhora da Penha will be found occupying one side of a large square close to the market place. I told a black whom I found locking the gates of the church that I desired to view the interior. Of course such a thing was impossible. Everything is impossible in Brazil until one pays for it, and then everything is possible. Needless to say, the gate swung open after passing a couple of milreis through the railings. Upon entering, an old priest appeared, and to him a Brazilian, who was with me, explained that I had come from the uttermost parts of the earth to view the church of our Lady of the Peak. The padre was not at all surprised, and after informing me that it was the only church in Brazil modelled upon the same plan as St. Peter's, at Rome, he withdrew, enjoining upon my companion to see to it that what I beheld should be to my edifying. Whereupon I set up my camera and photographed the interior and four of the side altars. The most attractive of these is the altar of Our Lady of Sorrows, but the art of the central picture is intruded upon by the exposure of a dead Christ in wax. Opposite this is the altar of the Sacred Heart—the communion. The next altar is that of Santa Theresa, which you are informed is a real piece of art, and it seems a pity that they should think it needs enhancing by columns of paper roses placed at the sides. The remaining altar is that of St. George and the Dragon. St. George lies in a full suit of mail inside the glazed chamber above the table of the altar.

Ascending one of the twin towers that rise from the roof behind the dome, I obtained the best view of the city and of the surrounding sea and country.

An interesting trip may be made to Olinda, the old capital of Pernambuco State, occupying the northern extremity of a circle of hills, which backs the low swampy tract in which Pernambuco city is situated. It derives its name from the times of the Dutch settlement, and there is no comparison between Olinda, on its wind-swept hill overlooking the sea, with the present capital pitched on its swampy sandbanks.

I walked to Olinda upon the line of rail through low, steamy mangrove swamps, where black, long-legged land crabs crawl among the contorted roots which clutch the mud like crooked fingers. Beautiful birds and insects abound. Clumps of palms, banana and bamboo trees lend a healthier aspect to the monotonous vivid green of the mangroves, which, to my mind, always conveys a suggestion of poisonous juices absorbed from the slime in which they grow, and from which the hot sun draws up and disseminates the germs of fever, never absent where the mangrove grows. Now and again we pass a fazenda, or plantation, the planter's house set among a group of palms ;

or a line of huts by the wayside, occupied by negroes or half-breeds, who watch you curiously, whilst the naked children run inside, and peep out in fear of the strange intruder upon their primitive seclusion. At times a matuto passes, mounted on a small, bony horse, with a long thin basket or canastra depending from each side of the saddle. I encountered a young Indian on the road, and gave him a milreis to stand still whilst I photographed him. Having got everything in readiness, I put my head under the focussing cloth, only to observe a diminutive pair of heels rapidly disappearing from the field of view. Just before reaching Olinda I set up my camera to take a view. A native came up, and asked a Hungarian gentleman, who was with me, "E para ver ou para fallar?" (Is it for looking through or speaking?) referring to the camera, which he evidently took to be some sort of a spy glass or a speaking machine. My companion replied that it was for neither of the purposes mentioned. "Cuanto se pago a peça?" came the next query—How much is it for a tune? He was informed the instrument did not play tunes. He appeared non-plussed. A thing that was not for sight, speech, or hearing seemed to have no function left. You could not eat it. He persisted in asking if it were Italian or German music, which showed that he had some strange knowledge mixed up with his ignorance. Upon being informed that the camera was not a musical instrument at all, he burst out with "Then what is it?" adding with some feeling, "You cannot deceive me. I was born in that house [pointing indiscriminately over the landscape], and I have travelled all over the world. I have been to Bahia and Italy and the Corcovado." Now, as Bahia is a city further south on the Brazil coast, and the Corcovado is a mountain overlooking the city of Rio de Janeiro, their juxtaposition with Italy provoked immoderate mirth, the point of which our friend failed to discern. He hung about whilst I completed my operations, and after seeing the whole long-legged singing machine broken down and stowed away in a small knapsack, exclaimed, "'E o Diabo!" (It's the deuce!), and watched us depart in mute astonishment.

The most worthy object in Olinda is the Convent of Mount Carmel, perched on the summit of a grassy hill. The day I arrived being the feast of Corpus Christi, the usual saints'-day procession filed out half an hour before sundown to perambulate the streets of the small town, the violet surplices of the processionists forming a brilliant spectacle as they wound up a steeply sloping street and disappeared. Olinda is now purely residential, but we may still note here and there relics of the Dutch occupation.

Upon another occasion I rode out to Encruzilhada, and walked thence to Caxangá, which lies on the Capibaribe river. As the route proceeds at right angles from the coast, the swamp gives place to broad valleys covered with capim, a tall grass forming the principal fodder of animals in Brazil. Railroad and high road are the same thing in these little developed parts. Occasional villages—if they merit such a title—crop up on the way, and consist of half a dozen houses on each side of the road. We next came to a cluster of houses and the village church just outside Caxangá. Women were engaged in the perennial occupation of washing clothes in the river. I wonder if those women ever tried to go over the bridge which spans the river in



which they wash their clothes. It is a good bridge, what there is of it, with iron girders going across at intervals of two or three feet. But the builders have never planked in the inter-spaces. You start valiantly, watching every step, but the current, about fifty feet below, has a mesmerising effect, and by the time you arrive in mid-stream, you cannot tell whether the river is flowing under the bridge or the bridge floating over the river. This is very distressing, and makes you see double just when you have need of all your wits.

Such views, and that of the solitary plantation house, are the only ones to be met with. So far as the life is anything at all, it is agricultural, but generally it consists in the mere living.

Caxangá has a neat little hotel, and forms the objective of many a pleasant trip of the English colony from the city, besides affording a cool, healthy retreat during the hot summer months.

I left Pernambuco for Rio de Janeiro by the Royal Mail steamer "Clyde" during May.

The coast range, which is granite throughout, seldom falls out of sight.

The bay of Rio de Janeiro is unrivalled. It affects the form of a bagpipe, being narrow at the mouth, at one part only 1,500 yards wide. The city lies at the south-west corner of the bay, some of the outlying suburbs doubling the corner and facing the Atlantic. After entering the bay, the shore falls rapidly back east and west, until it reaches a breadth of nearly 19 miles. It is bordered on the right by the hills of Nictheroy, on the left by the Sugar Loaf and Corcovado mountains, the city of Rio, and the Tijuca mountain range, which circles round behind. At the head of the bay rises the long jagged ridge of the Organ mountains.

There is a tale worth telling in connection with the Sugar Loaf. Although scaleable, its aspect is not inviting to would-be climbers. A squadron of the British Navy once put into Rio, and a young midy obtained leave to go ashore with the boat. The following morning Rio awoke to behold the Union Jack flying at the top of the Sugar Loaf. Bold spirits spent the better part of the day in trying to get it down, the crowd below becoming more furious as each attempt failed. At last a deputation put off to the British vessels, and it is not surprising that the youngster who had the pluck or the impudence to scale the Sugar Loaf to plant the British flag, should have the pluck or the impudence to own up. He was rowed ashore by a sniggering boatful of his own men, and in the sight of the outraged crowd, re-scaled and brought down the usurping flag.

To attempt to describe the scene from the bay would be futile. Suffice it to say that there is probably no other which like it combines at once the idyllic prettiness of a Nova Cintra, a Botafogo, or a Gloria, their white houses and churches set like chiselled milk-stones in a garden of palms; the bold beauty of the sun-lit bay studded with a hundred islands and islets; the naked asperities of rocks that do daily battle with wind and wave; the sombre simplicity of age-long forest covering the remoter slopes, which wind into and fold upon one another until the curves are lost in the crowning heights, whose sharp cones and riven ridges speak of a great effort long past, strangely at contrast with the solemn peace which now invests their lonely heights.

It is not strange that the semblance of a closed hand, with the index finger pointing to the sky, which may be readily detected in the serrated ridge of the Organ mountains, should have been called the Finger of God.

A no less remarkable counterfeit of the profile of the exiled Emperor Dom Pedro II., which lies facing the sky in the same chain, will serve to remind the present generation of one who, though an Emperor, was a scholar and a gentleman, and whose expulsion was strangely coincident with the beginning of the reign of disorder and retrogression among a people who set "Order and Progress" as their device in the Republican flag.

Rio de Janeiro has an official superficies of 21,870,000 metres, and, according to the general census of 1872, a population of 275,000 inhabitants, including the suburban parishes. In the absence of any proper measures to ascertain more recently the number of the population, 320,000 has been assigned inferentially as the maximum for 1884. The Gotha Almanack gives 350,000. I was present when an Englishman, who had become naturalised as a Brazilian, and occupied the post of guarda-môr in the Pernambuco Customs, all but gave the lie direct to a dissenting Teuton for maintaining that the population was 400,000, whilst he himself asserted it to be 700,000; and a Rio gentleman who has frequently visited London told me that although Rio was of the same extent as London, its population did not surpass a million. All considered, it is probable that 400,000 will not be very far out either way. About a quarter of the population is foreign, and about three-fourths of that foreign element Portuguese. Setting the foreign element aside, the blacks have the preponderance in numbers as against the whites. The blacks thrive in the climate of Rio; the fallow, unhealthy faces of the whites stamp them as interlopers.

The city, as already stated, lies at the south-west corner of the bay, and is built upon and between a number of spurs flung out by the Tijuca range, or detached hills or knots of hills, which lie between the latter and the bay. The number of these eminences, known as Morros, is 35. The old town, as it is called, is the most populous and least healthy, and forms the chief commercial centre. It is for the most part laid out in a system of long, narrow streets, crossing one another at right angles, streets so narrow that vehicles are permitted to move in them in one direction only, as indicated by the sign of a hand at the street corners. A full half of the narrow roadway is taken up by the bonds or trams. The footboards of the latter overlap the pathways, which are about three feet wide, and are little short of perambulating guillotines. The Rua 1<sup>o</sup>. de Marco, a street of ampler dimensions, forms the base of this system.

One of these narrowest of streets, the Rua do Ouvidor, is the fashionable parade and gossiping ground from one o'clock in the afternoon onwards. Traffic is stopped at that hour in the Rua do Ouvidor for the convenience of this highly important function. Here the society of Rio turns up daily and all but blocks the thoroughfare. Groups of young exquisites cover the ground by threes and fours. They talk volubly, vehemently, voluminously, as becomes the heirs of Lusitanian speech. Facility of speech is the curse of the Brazilian.

From youth up they talk and talk and talk, and of all this talking cometh nothing—nothing but the superficiality born of a light tongue, the power of saying nothing in five hundred words, and a spirit of disputation which would argue the sun out of the solar system.

Another important part of the city, the Cidade Nova, or New City, extends towards Tijuca, and is built upon low-lying land reclaimed from swamp. Through this, the Canal do Manguê, a long channel, has been cut to drain the land, and the stagnant, evil-smelling waters render still less salubrious a tract which, from its low position and slight fall to the bay, is unable to profit by the purifying agency of wind and water.

An altogether different atmosphere, in every sense of the word, pervades the opulent quarters to the south of the city, such as Gloria, Catete, Botafogo, and other outlying districts, where broad, well-kept thoroughfares are lined by elegant houses, many set in a garden of beautiful tropical plants, or buried in the still richer profusion of the chacara, which combines in itself the attributes of garden, park, orchard, and forcing house. Some fifty largos or praças, a dozen of which contain public gardens, together with the fine roads running many miles out into the suburbs, form no mean set-off to the congested areas in the heart of the city.

Proceeding southwards from the city, and skirting the Morro de Santa Thereza and the base of the Corcovado, on the right hand, we pass at the same time on the left the bay of Botafogo, all but encircled by mountains which terminate at the southern arm of the bay in the grim old Sugar Loaf. The calm, blue waters of this bay, with its mountain setting, are more suggestive of Alpine heights than the ebb and flow of the Atlantic. After passing the Largo dos Leões, the view is superb. The Dois Irmãos, or Two Brothers, stand immediately before us; the Gavea mounts like a tower ahead; on the right the Corcovado runs sheer up from plain to peak 2,300 feet above; on the left to the rear the sharp cone of the Sugar Loaf cuts the sky, and near at hand the lagoon Rodrigo de Freitas spreads out its blue murmurless waters. Here, on the seaward side of the Corcovado, lies the Jardim Botânico. The entrance opens on what is admittedly the finest palm avenue in the world. A second grove, only inferior in extent to the main avenue, crosses the latter at the entrance like the headpiece of the letter T. The principal grove extends about half a mile, and is formed by a hundred and fifty trees of the *Palma Imperial* in double file, separated by intervals of thirty feet, and with their grey, straight, regularly-rounded stems, practically walling up a pathway twenty feet broad.

As we pass up the avenue, side avenues open, some formed of a single species of tree. Now it is a grove of mangoes, then one of bamboo. Between these intersecting avenues lie greenswards, dotted with clumps of mixed trees, or solitary specimens of the more lordly sort, broad-leaved bananas, feathery bamboos and tree ferns, cabbage, coco and fan-palms, and all their lovely sisterhood; the dense cope of the heavy-fruited bread-fruit, the jaca and mango, whose thick, broad leaves make local darkness in the height of noon. Landward the garden is mountain-girt; seaward the shadowy avenue opens upon the sunlit waters as on a lighted stage.



Another of these public gardens is the *Passeio Publico*, on the Lapa, notable both for its rich collection of exotics and for the exquisite view obtainable from the terrace overlooking the bay. From this point the spectator commands the entrance to the bay, the opposite shore, the Sugar Loaf, the bay of Botafogo, and the green promontory of Gloria, the slope of which is sown with white-walled houses, among which the famous church of *Nossa Senhora da Gloria* appears half-way up the slope.

Opposite to this garden is the National Library, with 200,000 volumes. There are also a couple of private libraries, the *Bibliotheca Fluminense*, and the *Gabinete Portuguez de Leitura*. The Rio observatory, situated on the *Morro do Castello*, is well known in astronomical circles. The National Museum, formerly the Imperial Palace of *S. Christovão*, is particularly remarkable for its collections illustrative of the native Indian tribes. The leading institution in its branch is the Historical, Geographical, and Ethnographical Institute of Brazil. There are besides two minor geographical societies. Although pleasing enough of their kind, there are few edifices of any architectural pretension at Rio. The church of the *Candelaria* may be cited as an exception, an imposing structure surmounted by a great dome. The hospital of the *Santa Casa da Misericordia*, and the Academy of Fine Arts, the latter by a French architect, should also not be omitted. The presidential palace supplies an instance of the average public building at Rio.

There are in Rio about one hundred public schools, where primary instruction and the necessary stationery are given gratuitously by the State. There are, further, about two hundred private schools of primary instruction, sometimes with a department for secondary instruction attached. Secondary instruction is also represented by some dozen private schools, generally limited in scope and deplorably lax in method. Several admirable societies for the promotion of knowledge aim at supplying the gap in secondary instruction by maintaining free schools, the professors giving their services gratuitously. Higher instruction is offered by the Polytechnic School and the Faculty of Medicine. The State maintains the Academy of Fine Arts, the Conservatoire of Music, and the Institute for the Training of the Blind, Deaf, and Dumb. Pupils displaying artistic aptitude often receive grants from Government, to enable them to develop their talents for a period in Europe. Hospitals for general use, or maintained in the interests of particular bodies, are numerous and well-appointed, and unaided by the State. The truly charitable spirit of the Brazilian people here finds public expression, and the work of the fraternity of the *Santa Casa da Misericordia*, which not only maintains the magnificent hospital of that name with twelve hundred beds on the *Castello*, but administers several other institutions of a like nature from its ample purse, is above praise.

From the partial enumeration of public institutions at Rio it will be seen that there would appear to be no lack of those qualities of head and heart which make for national honour. To any one acquainted with Brazilian society, however, there will seem to be a strange disparity between these evidences of effort and the result achieved in the national life.

The means of instruction, for instance, is ample; a law has existed for forty years past, though never enforced, rendering instruction obligatory, but what with instructors without credentials, partial examiners, ill-regulated examinations, and degrees by courtesy, the system is fundamentally vicious. The fact that the inspectors of public instruction are nominated from political motives and serve gratuitously, takes away all the guarantees of qualification and diligence.

Strange contrasts result from this receptivity of the Brazilian in adopting new ideas, the old one often persisting side by side with its revolutionary rival. Thus the Faculty of Medicine is freely open to women, though the social freedom of women at Rio, not to mention the provinces, still smacks largely of the jealous restraints of colonial days. The same legislature which prohibits the ringing of a Protestant bell in the country has long since appropriated the five convents of the religious orders of its own faith, and set its foot on the noviciate. The spirit of individual freedom, which likes to find its own reflection in the liberty of the press, does not feel that freedom invaded by the anonymous scurrilities of men who may hire so much space in a public journal to defame one another with impunity, there being no law by which a journal can be held responsible for their publication. A "testa de ferro"—iron-head, as he is called, and equivalent to the *Sitz-editor* of Germany—is often kept on the staff, and upon due remuneration assumes the responsibility by signing articles of this nature.

There is probably nowhere a more extensive or more continuous service of tramways than at Rio; but the record of accidents in connection with them is appalling. Although it is calculated that a third of the population uses this means of conveyance every day, there is no law making companies civilly responsible for the negligence of their servants; and although the balance-sheets of the companies show large profits, they refuse under the circumstances to adopt any apparatus by which the risk of accident might be lessened.

Justice is not administered in Brazil. It is bought and sold, or given away—given away by a defective code which fails to cover some of the most flagrant evils by the fact that it throws upon the offended party the onus of instituting costly proceedings before what it knows to be a venal, defective, and dilatory tribunal; by the inadequate *personnel* of the police, the result of insufficient funds voted by the administration, and by the fact that the sub-delegates and inspectors, those immediately in contact with the police force, give their services gratuitously, which renders it practically impossible to demand from them special knowledge or adequate diligence in the discharge of their functions. Like the delegates and chief of police, their superiors, they are nominated by their political colleagues in power.

And here we touch the tap-root of the system of corruption called the Brazilian Government.

Favouritism, imported into Brazil by Dom João VI. from Portugal, has outlived the empire which followed the declaration of independence from the mother country, and remains firmly rooted in what might have been supposed to be the more liberal institutions of the Republic. The result is that party struggles with party for supremacy; for the Brazilian Government is like a shop, and blessed is he who keeps the till.

Instead of the so-called political parties being marked off from each other by any broad principle, they are indistinguishable in their passionate love of rhetorical display, their mutual recriminations and personalities. Sense of dignity, duty, or patriotism, there is practically none.

The deputies are well paid. I sailed with a large number of them going down from the Northern States for the opening of Parliament in May. Day after day I read that there was no sitting in the Chamber owing to non-attendance of deputies. The party and the pay secure, there was nothing left to strive for.

It was only in presence of such an invertebrate species of political morality that the Republican party, which, for ten years prior to 1885, could not boast of the election of a single Republican deputy, could, by the act of a military dictator, and after so short a lapse of time as five years, eject from the country one of the most democratic of sovereigns, without serious dissent. *Coups d'état*, Bahia wars, Ceara relief funds, are but pretexts for loosening the strings of the public purse, and wholesale speculation.

Since that time Brazil has gone steadily backward, and the latest virtue of which Brazilian statesmen boast is that they have not repudiated the national liability for loans which have found their way largely to their own pockets.

Individual enterprise struggles in vain against the monumental cupidity and shortsightedness of the Government. Heavy export duties are levied upon natural produce, of which there is practically an unlimited yield, notwithstanding the fact that the exploiter is constantly confronted with the problem of insufficient labour limiting his enterprise. What should form the labouring element are natives with little need and less desire to work.

One of the deputies with whom I went up to Rio—a shrewd man, conversant with European methods—told me that, owing to the exorbitant exactions of the Government beforehand, and the small security he felt as to the permanency under succeeding Governments of any arrangement which might be made, he had had to abandon a mineral enterprise in Central Bahia, which could have been worked with splendid results in any country but Brazil.

Import duties have been raised to such an extent, directly or by making duty partially payable in gold to cover depreciation of the paper currency, that the decrease in imports has recently caused the Government to re-model the tariff to save the life of the goose that lays the golden egg. This has, however, been done in such a way that their own officials often cannot execute the calculations required to ascertain the rate of duty to be charged, and have to proceed upon some rule-of-thumb plan; whilst plain merchants are often at their wits' end to know what grade of an article should be imported to enable them to sell again at certain fixed limits of price.

Laws, which would be called sharp practice in other walks of life, prepare pitfalls for the unwary. I had occasion to remit two hundred milreis by post, and, as registered letters have to be claimed personally and opened in presence of the authorities, there could be no suspicion as to my desire to conceal the fact that my letter contained money. The authorities confiscated twenty-five per cent of the amount for the



failure on my part to declare that the letter contained money. This seems a particularly one-sided arrangement, seeing that I have never appropriated anything belonging to the Brazilian Government for the numerous illustrated journals which the postal authorities forgot to deliver to me.

As there is no sense of patriotism among the administrators, so is there an almost entire absence of the spirit of citizenship among the governed classes. Effective, organised public opinion there is none. The Government seldom fails to have some political scandal on hand, but men shrug their shoulders helplessly, and the voice of papers like the admirably-conducted *Jornal do Commercio* is as that of one crying in the wilderness.

It is evident that such a state of things could not long exist if the people were inspired by higher principles than those of their governors. They are not. Patriotism is a literary virtue. Public morality is not ill-represented by the French sexual novel, which is as well in evidence in the Rua do Ouvidor as on the boulevards.

The correspondent who recently accompanied the President-elect, Campos Salles, to London, not only assured the Brazilian public that there were actually good-looking English ladies in the society of the Metropolis, but went so far as to advise the society of the Capital Federal to drop the daily society crush in the Rua do Ouvidor, and set apart days for social gathering in the public gardens in imitation of the Hyde Park function. With all his recognition of the good looks of the English woman, this gentleman seems to have overlooked her autonomy in English society, based as it is upon a mutual confidence between the sexes, which has never existed in Brazil.

Although Rio can boast some thirty churches—as notable, for the most part, for the absence of architectural grace as for the barbaric overloading of ornament inside—the influence of religion in Brazil is inversely as the opportunities for social distraction in secular ways.

In the matter of the fine arts the Academy has hitherto turned out little talent of note in either painting or sculpture, and those who have at all distinguished themselves generally prove of French or Italian extraction. The only sculpture of note in Rio is the equestrian statue of Dom Pedro I. by a Frenchman.

Great application with small aptitude is almost universally true of the Brazilian talent for music. The number of hours of consecutive practice which they will cram into one day is best known to their neighbours. As this goes on with open doors and windows, from morning red to evening grey, it saddens one to think of the many saw-mills standing idle for lack of a few hundred horse-power of this same energy. A lady who lived opposite to me at Victoria used to play the same tune every evening, and all the evening from five o'clock onwards. When this had gone on for a fortnight I began to feel interested. I knew there must be some deep motive underlying this persistent expenditure of force in one never-changing channel. I asked the black servant what the tune was called. He replied that it was called "The Falling Leaves." I asked him how long those leaves had been falling, but he did not seem to remember. He had only been in Victoria about fifteen years himself. I said blood would be spilled unless he arranged to have those leaves fall upward, inward, backward,

any way but my way for the future. When I went out for my evening stroll, those falling leaves followed me up the street; when I returned they were blown in my face. If I opened the window they fell inside; if I slammed it, they came through the tiles. I knew that tune so well that I could whistle it backwards or upside-down; but I cannot sing the old song now.

Carlos Gomez, the composer of the operas *Guarany*, *Fosca*, etc., is the only one of any consequence.

There are several theatres at Rio, in the principal of which excellent performances of the Italian opera were given during my stay there.

To summarise. I do not believe in any future for Brazil constituted as it is. Unless the miracle of the rejuvenescence of a decadent race takes place, or it becomes again the dependency of some colonising power more capable of governing the people to their good than the race from which they spring, I can only look forward to the gradual education of the blacks, now entirely emancipated from slavery, and their final ascendancy. The white man is manifestly an interloper, physically, and on that very account, to a large extent, mentally and morally decrepit. The African negro is at home in Brazil. He thrives, and succumbs only when he comes into contact with the vices and enervating influences of the white man.

I took up my quarters at the Hotel Internacional on the spur of Santa Thereza. This is reached by the electric tram which ascends from the Largo da Carioca, and, following the contour of the Morro of Santa Thereza, attains Silvestre on the Corcovado slope after a run of about four miles rising through six hundred feet. At the commencement of this ride occurs a blood-curdling strip where the car passes over the lofty arches of Carioca. These form part of the aqueduct conveying water from the Corcovado to the city, and at this point connect the heights of São Antonio and Santa Thereza by a bridge-like structure formed by a series of narrow, lofty, solidly-constructed arches some hundreds of yards in length, and about a foot broader on each side than the car which passes over it, and the roofs and gardens of the part of the city occupying the valley below. The sides of this aerial causeway are decorated, not to say guarded, by ordinary garden netting, supported at intervals by pea-sticks. We used to call it the hen-run; but when one reached the middle, with the car flying along full speed and only one's hat to cling to, people sat bolt upright with a morbid dread lest by leaning to right or left the car should be caused to leave the rails, and pitch through the air with a quarter of a mile of ineffectual wire-netting at its tail.

My proximity to the Corcovado at Santa Thereza drew me often in that direction. There are two routes by which one may ascend to the peak upon this, the only scaleable side of the mountain. One follows the electric tramway along the Morro of Santa Thereza as far as Silvestre, at the head of the valley lying between the Santa Thereza spur and the Morro do Ingles. The other ascends from Laranjeiras in the city along the slope of the Morro do Ingles, joining the electric way at Silvestre. The latter route is that traversed by the Corcovado mountain railway, which works on the Riggerbach system.

From Silvestre the true ascent of the Corcovado begins. A series of skeleton bridges similar to that below Silvestre span succes-

sive chasms cutting the line, their depth disguised by the matted vegetation. The last station below the peak is Paineiras, which lies in a small wooded plateau. Beside a few huts and the station, there is nothing there but the Paineiras Hotel. This serves as a pleasure and health resort, though, like Silvestre, Paineiras is rather a name than a place, the stations serving principally as convenient spots for starting promenades in the mountains. Sometimes it is very cold in Paineiras, and I call vividly to mind one occasion when the mists slid down from the summit, and three Englishmen sat wrapped in blankets, all but shivering. The line from this point rises one in three. The summit of the Corcovado is surmounted by a belvedere, and gives a most adequate idea of the forest growth lining the way. Just before reaching the summit, the mountain falls away where the railroad has been blasted on the face of the cliff, and for a few moments the train labours up the steep gradient by a narrow path, on the left of which the Corcovado drops sheer down to sea level like a wall, and discloses a sea view of wonderful beauty more than two thousand feet below. The train halts about a hundred feet below the summit. A spiral path leads to the summit, which is crowned by a large iron pavilion, and where the hump of the tree projects, it is floored and walled round with concrete, so that one may approach and sit comfortably at the verge of the cliff.

Although only 2,300 feet high the view from the Corcovado is beyond description. The mountain has its moods. It will lure you to climb through the blazing sun, and as soon as you reach the point of vantage, whistle its drenching clouds up from the sea, until you feel as if you were on a very Brocken amid the erratic mists, driving up the outer wall, to hurry over the crest, then drop over the precipice to the forest-clad valley below. But any but the vulgar sightseer, having come once to the Corcovado, will come again and often. Some day it will be absolutely clear, as it can be in the tropics only. Then he will be rewarded with a view upon the like of which he will look again in no part of the world. The city and suburbs lie below, marked out like squares on a chess-board. On one hand, the mountain-circled bay lies open in its whole extent; on another the outer Atlantic laps with waves of the most gorgeous ultramarine blue, the dazzling white sands spread out upon the shore—a motion without sound, for not an echo rises to the still summit. The plain, or what would be plain, but for its five and thirty hills and spurs, appears in the gaps between them, whitened, as it were, with a surf of sunlit houses, which breaks against the rising ground on all sides, flinging its spray in detached chacaras and villas up their slopes. On another side the Dois Irmaõs stand like twin giants at an altitude of 2,000 feet, and farther on the hollowed summit of the Gavea, 2,350 feet high, shows like a curule chair against the sky, where some Erdgeist might recline and watch the ships come and go upon the sea below, like shuttles weaving in the loom of Time. Far away, at the head of the bay, the Organ Mountains jag the sky with their sharp peaks, and face their southern compeers over the heads of lesser things.

The Corcovado is wooded to the top. A humming-bird once shared the peak with me for several hours, he searching the blossoms to find insects, and I searching everywhere to find him.



One can well understand that these land-locked hollows and valleys, opening, if they open at all, on a land-locked bay, must form beneath a tropical sun but a huge furnace; for the light and heat strike from flank to flank, and the narrow neck by which the bay opens on to the sea is but as the reed to the bagpipe, and whatever breeze might reach Rio from the sea is baulked from doing so by the Sugar Loaf, which lies before it like some mountain Sphinx. No wonder people have talked of blowing it up and letting in the air.

The mean temperature at Rio is 73 deg. Fahr. The mean for summer, or the rainy season, lasting from October to the end of March, is 80 deg., and that of winter, or the dry season, which is from April to September, is 74 deg. During January and February, the hottest months, the temperature averages 79.5 deg., and during July, the coolest month, 70 deg. The highest temperature registered at Rio is 98 deg. During the summer months the heat remains steady day and night, and it is this continuity, rather than the intensity of the heat, which so tries the natives, all of whom escape if possible to the hill country for the season or during the nights.

Rio possesses a humid climate. The humidity is nearly double that of London. It rains, on an average, fifty-five days in summer and thirty-five in winter. The total average rainfall for summer is 28 inches, and for winter 16 inches.

The feelings of the northerner looking down from the Corcovado upon the fair city below are not wholly artistic. It is a beautiful fever den, and I have known too many, for whom it became but a beautiful grave, to look upon it as other than a lovely, cruel siren.

Yellow fever is said to take its cue from the greater or less quantity of rain which falls during the summer. The year 1898 was marked by an unusually dry summer, several months passing without any rain. Yellow fever, though not as prevalent as might have been expected, was unusually fatal in its results.

This disease, introduced into Rio from Bahia, in the very dry summer of 1849, attacked 80,000 people, and swept off nearly 4,000. It disappeared at the beginning of the following dry season, although it was still to be found on the roadstead up to September. It has re-appeared with varying intensity every summer since then, with the exception of the great cholera year of 1855, and the seven years from 1862 to 1869. In 1870 it appeared on board no fewer than 364 vessels. It is pre-eminently a disease of the low-lying shore tracts. Europeans, especially new arrivals, are peculiarly susceptible. The fact that Brazilians, in common with persons over sixty years of age, are rarely attacked, is probably due to the anæmic habit of body in both. Negroes are exempt. To say that they are exempt because of the similarity of climate between Rio and their original habitat is only a statement of probable fact, not an explanation of it. Yellow fever does not appear in the higher ground of the interior, and people from the interior passing through Rio share the susceptibility of Europeans to its influence. The susceptibility of inhabitants of colder climates to contract yellow fever is directly in the proportion of the distance of that climate from the Equator. Scandinavians head the list.

There is no accepted remedy for the disease, and the variety of its symptoms has greatly perplexed medical men. Its primary seat has

been successively located in several important organs of the body. Dr. Domingos Jose Freire, the director of the Junta Hygienica at Rio, asserted that he had separated and watched the reproduction of the bacillus, a somewhat explosive operation, resembling the bursting of the maternal body in the reproduction of oviparous infusoria. Sanarelli, of Montevideo, who has written a lucid, business-like treatise in Spanish on the results of his own experiments, condemns Freire's results as pure fiction. He claims to have separated the germ of the disease, which he names the *bacillus icteroides*, and to have localised it; or, what comes to the same thing, proved that it has no locus, but exists freely in the blood. The manifestation of disorders in the liver, kidneys, the intestinal canal, which, regarded as primary symptoms of yellow fever, caused so much perplexity, become intelligible when regarded as secondary disorders consequent upon the disturbing presence of the free bacillus in the blood. These secondary evils, Sanarelli maintains, are the immediate causes of death. This is highly satisfactory in theory, but if a man dies, he is not very particular whether he dies from a secondary, tertiary, or quaternary evil.

The susceptibility of ships' crews to yellow fever, and the persistency with which the disease clings to a boat where it has once obtained a footing, have long attracted attention. I had a practical instance in the "Norseman," a cable ship, upon which yellow fever broke out at Pernambuco. The boat was turned out of harbour into the offing, and although there was scarcely a case of fever in Pernambuco at the time, man after man went down with it, many of the cases proving fatal.

Sanarelli attributes these attacks of yellow fever on board to the preservative action exerted in behalf of the bacilli by the fungoid growths common on shipboard. By exposing fungi upon gelatine plates the bacilli arranged themselves in circular form about the central fungus, and were thus preserved.

The year 1855, notable for the intermission of yellow fever for the first time since its importation, furnished five thousand victims to an epidemic of cholera. It began in the mid-winter month of July, attacking principally the shore and low-lying district of the Mangue. Unlike yellow fever, it chose its victims chiefly from the black and coloured population. It reappeared in the hot month of January, 1867, but in a milder form, and disappeared completely in May, after a violent storm from the west-south-west.

The total mortality of Rio is about 35 per mil.

Another favourite trip of mine was the walk which strikes off from the mountain railway at Paineiras, and follows the aqueduct up to one of the sources it taps in the heights of the Corcovado. Miles of the most enchanting scenery are traversed by a path winding up and round the mountain flank in the coolness of the forest. The methods of canalisation adopted in the construction of this fine aqueduct are very good. A pipe, supported by mud blocks, receives the water as it trickles from the source. Then a grooved conduit takes its place farther down. Then the same class of open conduit is raised on an arched wall. This is succeeded below by a closed aqueduct of ampler dimensions, carrying the increasing volume of water from the reservoir at Silvestre through some four miles until it is conveyed from the Morro

of Santa Thereza to that of São Antonio by the massive arches of Carioca. Needless to say this work dates back to the times of the Portuguese governors.

The Carioca was the first of some eight rivers to be utilised to furnish water for the inhabitants of the capital, which have made of Rio one of the best watered cities of the globe. It was probably when the first chafariz was constructed in what is now the Largo da Carioca, at the beginning of the eighteenth century, that the people of the city gave themselves the name of Cariocas, which they retain to this day.

The lighting of the city is also upon the most liberal scale, and it is a sight of rare beauty when returning by ferry at night to see the five-mile line of lamps skirting the bay, behind which the flood of light washes, as it were, up the shore, runs in between the hills and up the valleys, and dots the irregular heights with a thousand little beacons in the night.

Looking from anywhere on the Corcovado a fine view is obtained. For the very opulence of Nature is here—white-stemmed trees that shoot up through sylvan shade to the light their rivals intercept two hundred feet above, and in their eagerness to reach it fail to develop corresponding girth; creepers that race up after them, twist round them and grow into them like the threads of a screw, or lash them to their neighbours, and, tightening with the years, crush the life out of them, pull them down, and die with them; orchids and parasites of many kinds that rest in the fork of their branches; beard-like mosses that hang in silken wisps a yard or two in length, and when the tree dies, still hang on, making death lovely in decay; great balls of granular earth, borne up grain by grain by the ants, and cemented together to form their home in the angle of some stout branch; and often upon this, a cactus that strikes root in the earthy nest, and lives, a parasite upon a parasite; thousand-chambered papery hives built in a globe about a branch, where colonies of hornets house; and on the ground—a wilderness of beauty—sensitive plants, ferns, and mosses; every grain of earth laden with its maximum of emulative life. The forces at work there to heave the sap can be comparable only with the tides of ocean; the weight heaved must be incalculable tons, and yet one hears every leaf fall rustling to the ground. The silence would be almost oppressive were it not for the cicadas answering one another with brazen ring, the strange cries and rare song of birds, the garrulous chirp of innumerable crickets; and in the vast solitude one feels companionship with the quick lizard that darts across the rock, the busy beetle that whirrs by to some ever-distant goal; the blue-winged *Morpho*, a butterfly as large as a bird, flapping in lazy majesty through the streaks of sunlight; the tiny humming-birds, no bigger than some moths, which, wasp-like, dart and poise, then dart again, their richly-tinted plumage flashing like a jewel that is moved.

“When beauty is near danger is not far away,” is a safe maxim in the tropics. Do not pick up curious-looking pieces of stick. I know a lady who attempted to do so, but it fortunately wriggled away. There are a good many Aaron’s rods in Brazilian forests. I once told an Indian whom I met in the forest on the Amazon that I had not seen any snakes. “No,” replied the man, “but they have seen you.”



If one begins to expatiate upon the beauties of Rio, one will never end, and the inadequacy of words arouses a certain sense of shame. Tijuca must, however, be mentioned. Taking the bond to the terminus some three or four miles from the city, a horse can be obtained close by, and by following either the old or the new Tijuca road we can make the ascent to the peak of Andarahy, the principal one in the chain, and reach an altitude of 3,400 feet. The forest growth here, as in the whole Tijuca range, is most luxuriant, and we can never tire of the grace of countless arborescent ferns which grow on the summit to a height of several yards.

There is one feature which will always strike the mountaineer in the view offered from the heights above Rio. The altitudes, though insignificant in themselves, go for all they are worth, and the views only stop at sea-level. I have stood on the crest of the Peruvian Cordillera, some fifteen or sixteen thousand feet above sea-level, with a much more limited view than is offered from any of the higher peaks at Rio, and that because the plains immediately skirting the slopes were themselves at a great altitude above the sea.

Petropolis, Theresopolis, and Nova Friburgo, all situated in the Organ Mountains, offer scenes of a similar though at times a severer, order of beauty. The shore of Icarahy, just outside Nictheroy, which faces Rio from the opposite side of the bay, is a gem of loveliness in itself, and lays bare a superb view of the entrance to the bay, the Sugar Loaf, Corcovado, and Gavea. The island of Paquetá, about seven miles out in the bay, is a little paradise of vegetation, circled on the shore line by a fantastic ring of granite blocks. In short, here, as everywhere in the neighbourhood of Rio, is the contrast of the mingling smile and frown of Nature. It is like the beauty of a fine old face, which shows not less beautiful for the significant lines where days long past have graven their record. The sea that beats on the base of the Gavea sleeps like a mountain tarn in the lagoon of Rodrigo de Freitas; the palm shades the granite that the ground lays bare; mountain and swamp-land, forest and rock, hill-filled plain and island-chequered bay—such is Rio, the pretty, the beautiful, the sublime.

I left Rio temporarily at the end of May by the National steamer "Brazil" to visit Victoria, the capital of the State of Espirito Santo, lying a day's run to the north of Rio. These steamers are Clyde-built boats, but not all the waters of Abana and Pharphar could restore them to pristine purity. I was sorry for that boat. It was a fellow-countryman of mine, so to say, in a foreign land. I knew how it must feel to have a few hundred tons of carne secca in one's hold, the intolerable reek of which made the boat little more than a floating carcase on the face of the deep. There was a different smell to every part of the ship, an odour of past days, of people who had travailed in deep waters, and gone their way, leaving a large portion of their meals behind them. I slept in my rug in the smoke-house. When day broke I sought the bath. Baths, however, are only looked upon as idiosyncrasies of English shipbuilders. The Brazilian uses them to store vegetables. He does not bathe, and probably regards Europeans as an uncommonly ill-conditioned lot, to require such frequent scouring. I went to what should have been my sleeping-bunk, where my yoke-fellow, a native, still slumbered sweetly in his clothes, and in an atmosphere, so to say,

all his own. I said I would wash, but the tap was dry and the water-bottle empty. I rammed the button of what should have been an electric bell, which is a peculiarly irritating apparatus when no one responds, because there is no cord to wreak vengeance upon. Then I called for water until half the ship came to see if anybody had fainted. I have never had that water from that day to this.

The table on board the "Brazil" was not only an indecency, it was positive robbery. There are two meals per day, one at half-past nine, the other at half-past four. At the first of these you get devilled bones and stringy fowls; at the second, stringy fowls and devilled bones. They are the same fowls which you see dragged all but dead from the cages on deck, where they lie packed and suffocating in the sun. I do not know where the bones came from; they are probably part of the ship's fixtures. I do not exaggerate when I say that the cost of victualling passengers on board the "Brazil" cannot exceed threepence per head per day. I lived principally on beans and bottled stout. Although the National boats are always overloaded with passengers and cargo, they are said not to pay. I should be glad if I thought it were true. Probably they do not pay the shareholders; but then, if they did, what would become of the directors?

I do not give these particulars with a desire to communicate information, but from pure revenge. The natural fate of the poor old Clyde-built "Brazil" can only be to be sunk some day by the usual incompetence of the Government-appointed pilots of Brazil. May the salt deep make her sweet!

After a run of twenty-six hours we entered the port of Victoria. For miles down the coast the peak of the Penha had been in view, a conical granite mountain capped by an old monastery, which rises on the left of the entrance to the harbour. As we followed the long irregular channel leading to the port, bare, sea-worn rocks skirt the water's edge, and mountains rise on every hand. Broad tracts of mangrove shrubs cover the low swamp land lying between the frequent hills, the latter being for the most part forest-clad.

Passing the old capital of the province of Espirito Santo—Villa Velha—lying at the head of a small bay to the landward of the Penha, we noticed a large wood-and-iron structure on one of the slopes on the left hand, marked "Immigrazione," and serving to house Italian immigrants pending arrangements for their proceeding up country. Then the channel narrows down to a stone's throw, where the boat passes within a few yards of the bare wall of the Penedo Rock, which rises sheer from the water some few hundred feet, and guards the port in very much the same grim sentinel style as the Sugar Loaf at Rio.

On the right stands the old dismantled Portuguese fort, the antiquated spiked guns and balls lying embedded in the earth, whilst peaceable cocks and hens peck the rust from the prostrate engines of war.

After passing the Penedo, the banks fall away right and left, and Victoria appears on the right of a sheet of water about a mile long and a quarter of a mile broad, forming the harbour. The anchorage for ocean-going craft, however, is limited to the small corner on the left of the entrance, a landing stage in connection with the railway being in process of construction. The railway is placed upon the side of the

water opposite to Victoria, because the mainland is there, Victoria being upon an island. A cluster of huts was lying beside the station, inhabited by workmen connected with the line. The direction of the railway, as is almost always the case in Brazil, is in the hands of Englishmen. The shore runs on beneath low frequent hills, until what appears to be the head of an inlet from the harbour is seen to open upon a channel which continues to skirt the island, and connects with the Rio Doce, the principal waterway of the province. This is navigated only by long narrow canoes, actually, or formed on the model of, dug-outs, each bringing its contribution of coffee beans or farinha for sale to the agents of large New York firms buying at Victoria. Coffee is practically the only product of the district, and at the time of my stay at Victoria was selling for ten milreis per bag of one arroba, equivalent to a fraction over twopence a pound. The planters used to tell me in despair that the price did no more than pay for labour and transport, and when one considers what coffee fetches after the less tedious labour of roasting, grinding, and adulteration, it is evident that some one thrives at the expense of both planter and consumer.

Crossing from the mainland to the island by the channel mentioned, a cluster of some two hundred shanties appears on a slope above the mangrove-covered margin of the water. These are generally wattled structures with the interstices plastered with mud, and, from the frequency of the palm-thatch roof, the locality has been named the *Cidade de Palha*, or City of Straw. The Government allows any immigrant to rear his dwelling in the City of Straw without payment, on the understanding that he shall be ready to turn out if the interest of the Government should require it. The settlers are chiefly Italian and Portuguese.

The large open campo, called the *Campinho*, was recently drained by a rude ditch cut in the ground connecting with the harbour. The high ground in the centre is known as the *Cidade Alta*, or High Town, and here are situated the Treasury, public schools, post and telegraph offices, the cathedral and minor churches, and some of the better class residences. The church of *São Thiago* adjoins the Treasury, and although bought by the Government, and in disuse, popular sentiment does not admit of its being used for secular purposes.

The principal street in Victoria is the *Rua 1º de Março*, running parallel with the shore, and consisting almost entirely of stores, with the store-keepers' dwellings above. By continuing down this street, we should enter an outlying continuation of it called the *Capichava*, after which we should come upon the channel entering the port with the *Penedo* on our right, and the fort below our feet at the water's edge, thus having completed a circuit of the port. Following on further, we should come upon wide stretches of mangrove swamp, and probably hear the natives thrusting about under cover of the bushes in search of the long-legged black crabs which seem appropriate denizens of these foul black bogs, and which, for all that, do not seem less appropriate for human consumption.

Victoria suffers serious disadvantages from its location upon an island. The water supply, especially in dry years like 1898, is sadly deficient. All the water is borne from public fountains in old kerosene



cans upon the heads of the blacks. My host employed two such carriers going backward and forward the whole day at a cost of 100 milreis per month. Twenty-five to thirty pounds per annum is not a mean water-rate. A bath is a rare luxury. You spread a newspaper on the floor, then plant a tin basin of water upon it, and bestride it like a Colossus. When you have done with the water the kitchen appropriates it. I never saw water thrown away. I do not know what becomes of it finally; probably it goes solid. There is a gas works at Victoria, and a system of pipes through the principal thoroughfares. But Victoria has gone back to kerosene. The gas works, which, by the by, were fitted up by an Oldham firm, are there for anybody who will take them away, and the party who introduced gaslight to Victoria is trying to get the contract for an electric installation, after which he intends to retire to Portugal, when the light will probably go out.

The drainage of the town is of the simplest system—the kind that existed before drains were invented.

Victoria is very poor, and the State of which it is the capital is the poorest of the Republic. The Bishop gets about one hundred and fifty pounds a year, and a palace, and there were great searchings of heart among the ladies during my stay, because the said Bishop left for an indefinite period of Rio, and his flock were afraid he would never return.

There are two daily newspapers in Victoria, one is the something of *Espírito Santo*, and the other the something else. Papers always seem to go in pairs in the smallest of towns. I used to read both of them right through every day. They are little larger than a sheet of foolscap, but *multum in parvo* indeed in the matter of mutual vituperation. One might say that those two papers live for one another. Certainly either of them would die if it had not the other upon which to pour the vial of its daily wrath. That part of their columns not consecrated to this exchange of journalistic amenities, “felicitates the most illustrious citizen and co-religionary so-and-so upon the sixteenth anniversary of the birthday of his very estimable and accomplished daughter.” And so on. When “our contemporary,” as they call each other, fails to supply the necessary irritant to arouse the daily choler, they descend jointly upon the municipality, and the carnage is something appalling.

There is a wooden theatre in the town. A wandering company turned up whilst I was there, and I went to the impressario's benefit. But Victoria cannot support even a wandering company, and as there was no money to pay the actors, they struck, and came to caterwaul among the audience, whilst the impressario and his wife played their own benefit. After a general scuffle, a youth went on the stage, and read about a hundred and fifty lines about the “boundless realms of art,” and when it was all over, we found it was half-past one on Sunday morning, and went home with a crashing brass band, which had played during the intervals, and now gave the natives a midnight rouser in their beds.

It is hard to imagine what the people would do but for the numerous religious festivals which furnish an excuse for a little public excitement. On May 29th came the procession of *Maria Auxiliadora*,

or the closing of the month of Mary, the month of May being so called from the numerous feasts in connection with the Virgin occurring in that month. The old Church of Mount Carmel, built in 1551, and bearing the appropriate inscription from the Book of Job, "Have pity on me, have pity on me, you that are my friends;" forms the point of departure. Its stained old painted porches are decorated with banners and pennants, and about half an hour before sundown some four or five hundred girls—black, white, and yellow—issue from them, and descend through the high town into the principal street, one file at each side of the road, each of the processionists bearing a lighted taper. The unmarried are dressed in white, the married in black. The first two or three hundred bear the red silk tippet of the congregation of Maria Auxiliadora, the remainder the green one of that of the Sacred Heart. A sacristan heads the procession with a large brass crucifix, and a couple of acolytes with lighted candles support him on the right and left. At intervals decorated thrones are borne aloft by four of the girls, the first with the image of the Virgin, the second an image of the founder of Christianity, and others of saints. In the rear comes the Bishop of Espirito, a man of 36, in flowing pontificals, and shadowed by a canopy supported on six poles. The houses are decorated with lighted Chinese lanterns, and the way is strewn with leaves like laurel. From the balconies of the houses flowers and plucked petals piled up on trays are showered upon the virgins; for this is the key-note of the festival. All heads are uncovered, all houses of business closed. Rockets keep up a continuous rattle, the church bells tintinabulate, and a cannonade is kept up at indeterminate intervals. At half-past six, before the procession reaches the cathedral, the bishop delivers his discourse, and the month of Mary closes for another year.

Two days later comes the procession of St. Benedict the Black, or, as it is unofficially called, the Feast of the Carumurús, the latter being the black element, which is very considerable in Victoria.

St. Benedict is held to be the greatest wonder-worker after Virgin herself. His miracles and visions are enacted on the stage at Rio. There is a delightful spontaneity and "go" about the festival of the black saint, which is characteristic of his dark following. The procession sets out from the church of St. Benedict. This saint has two churches under his protection at Victoria, the old one and the new, and the bellringers vie with one another in their extempore performances. Shortly before sundown a terrific volley of rockets heralds the issue of the saint upon his public promenade, the procession being headed by a large green banner upon which the figure of St. Benedict appears, and accompanied by the band of the police. The processionists are almost entirely black, and are themselves dressed in black, with a green tippet on their shoulders. St. Benedict, mounted on a bed of artificial roses, stands with a bunch of flowers in one hand and the Holy Child in the other. The black women—fine, strapping, muscular forms—accompany the procession in a blaze of highly-coloured sateens and brocades, and their devotion to their patron is evidenced by the ardour with which they rush from one street to another to catch another glimpse of the little black figure, and fling kisses to it from anywhere within a radius of two hundred yards.

There are two feasts of St. Benedict each year, that of the new church in May, and that of the old in December. This was the feast of the new church. It had appropriated the image of the old church. When the saint came in sight at the bottom of the hill upon which the church is built, the bells, one high, one low, worked themselves up into a perfect frenzy of tintinabulation. At this signal sheaves of rockets, containing thirty or forty apiece, shot up from different parts of the city, exploding like the crack of musketry as they spread out upon the sky. The sun had set, the candles shone out along the line of the procession, and the crowd of mingling white and highly-coloured costumes of those accompanying it on each side and at the rear made a fine picture as they ascended the hill, encircled as it is by the mountains on all hands, with here and there a glimpse of the water, or an early star hanging above the ridge. As the last sheaf of rockets shot up from the base of the incline, it formed a great bunch of flame, upon which the cross stood out black as night.

The church has little more than a sort of Communion rail, where the people sit down. Some bring chairs; most sit or kneel on the floor. The eastern wall is permanently decorated with a perfect wilderness of artificial flowers, which rejoice the heart of the Carumurú. The manner in which the blacks crowd round their saint when he is deposited in the nave is almost pathetic in its childish devotion. This is their own saint, and I overheard an old negress telling a group of younger ones that he was "muito obispo"—very much of a bishop.

Next to the church is a wooden structure with tables holding the festal offerings to the saint, to be sold afterwards by auction. Among other things were bunches of bananas, plates of nectarines, sweetmeats wrapped in green leaves, which served the double purpose of protecting them from the sun and dust, and of hiding the places from which tasty bits had been abstracted. The most noticeable offering was a large full-rig barque, bearing the enigmatical inscription, "*Triumpho da Inveja*"—triumph of envy. Solitary bottles of beer were also presented to the saint; and beer costs three milreis a bottle in Victoria, and is considerably more respectable than claret. There is a sermon in the church, and the jubilation goes on till about 10 p.m.

After St. Benedict comes the Feast of Our Lady of Sorrows, with procession and band. Then the Feast of the Santissimo, when the host is borne through the streets, also with a band. All are called "feasts," whatever their nature or object, and are treated as such. Then comes St. Antonio. The Vesper is a great day with the young folk, a sort of 5th of November, celebrated with bonfires and fireworks with great energy. The Vespers of St. John and St. Peter share those honours with St. Anthony. After the fireworks my host collected all the girls in the neighbourhood in a quarter of an hour, and we played forfeits and post and what is known in the North of England as "clumps," just as one might have played at home.

English boats do not call at Victoria, save an occasional tramp to load coffee. The German, French, and Italian boats are regular visitors. The predominating progressive influence up-country is German. In Victoria itself the Germans have a small club, and a large book of



rules and regulations. The natives also have a club, with billiards, bottled beer, and a monthly dance.

A profitable trip may be made by launch to the old capital, Villa Velha, which lies up channel toward the sea. The position was abandoned after the Dutch attack on the Portuguese, and the present capital of Victoria received its name from the victory the latter then achieved. Villa Velha is now purely residential, a sleepy, old-time spot where people go for a month or two when they get run down in the hot, unhealthy air of Victoria. The town lines the shore at the head of a well-closed bay. It is overlooked by the mountain called the Penha, or Peak, rising between it and the outer sea, and surmounted by the convent of Our Lady of the Peak. The ascent is long and steep, still many are not deterred from making a pilgrimage from the neighbouring city to the altar in the small convent church. There is a history with this convent.

It were tedious to repeat what was said of the wonderful view from the Corcovado at Rio, but it is equally applicable to that from the Penha. Sea and bay, mountain and forest, winding channels and bird's-eye views of the little town below, are full of a beauty, in describing which words are vain. The little public square always proves the first feature in the laying out of Portuguese towns. At the head of it is the village church, for Villa Velha is nothing but a village. In the middle is the village pump or the village lamp-post—I forget which. There is a Frenchman living in that square who is trying to found a cocoa industry. He gave me a small tin, and told me to recommend it in Europe. When I have told you I ate the cocoa before I got back to Victoria, and found it very good, I shall feel that I have freed myself of a moral burden.

---

---

## NEW BOOK.

---

“**KING SOLOMON’S GOLDEN OPHIR,**” a research into the most ancient gold production in history. By Dr. CARL PETERS. 118pp. 1899. The Leadenhall Press, London. With portrait. No index or contents table.

THIS little book gives perhaps a key to Dr. Peters’ expedition to the countries on the upper waters of the Zambesi. He can hardly find Ophir in that district and he may not be looking for gold alone. In a short preface he makes this remark: “It will be of double interest to find out in what part of the world the oldest mining country of history was situated. It is not only of historical interest but should prove of practical value, because there is no evidence that the ancient nations, with their primitive tools, really exhausted the gold mines they were working. The whereabouts of ‘King Solomon’s Mines’ does not appeal to the fancy alone.”

The book is very interesting and will repay perusal, but the interest of the book will be much enhanced when we have the record of Dr. Peters’ present investigations.

## THE TASMANIAN HALF-CASTES OF THE FURNEAUX ISLANDS.

By Mr. EDWARD STEPHENS, of Cape Barren Island.

[NOTE.—Some time ago I asked Bishop Montgomery to get me some information about these half-castes for insertion in the second edition (now in the press) of my “*Aborigines of Tasmania*.” The Bishop very kindly sent me the following paper.—H. LING ROTH.]

THE Right Reverend H. H. Montgomery, D.D., the Bishop of Tasmania, is the sincere friend of the aboriginal races of this part of the world, and of all who can trace their descent from those races. He has proved this again and again at great personal inconvenience and self-sacrifice. He was the first bishop to arrange for a continuous and systematic Christian service for the descendants of the old Tasmanian and other aboriginal races now occupying the Furneaux Islands. His lordship has been good enough to ask me to write a few lines about these people, believing that, from my intimate acquaintance with them, extending over a number of years, I would be able to write something that might be of interest. My great difficulty is not in the lack of material, but in the selecting and condensing from the mass at my command.

East longitude 148 and south latitude 40 intersect at Flinders, the largest island of the Furneaux group. This group is at the eastern entrance of Bass Strait, and nearly midway between Australia and Tasmania. Tradition, and the records in the archives of New South Wales, indicate that white men and native women, with their half-caste children, lived on these islands more than a century ago. In 1797 a vessel named the “*Sydney Cove*” was wrecked on Cape Barren Island. Shortly after it was found that the island was inhabited by people who were not only capable of using the materials of the “*Sydney Cove*” for boat-building purposes, but had opened a trade with China in the skins of the fur-seal which abounded in these waters in those days. They were even looked upon as a menace to the peaceful colonising intentions of the youthful province of New South Wales, and regarded as of sufficient importance to warrant the government of that colony in issuing regulations for restricting their freedom and controlling their power. They had learnt, and successfully practised, the ancient art of supplying their artificial wants at the expense of passing ships. In 1815 Captain Kelly left Hobart, in a small open, five-oared whaleboat, to circumnavigate Tasmania. One of his crew had been a sealer in Bass Strait many years before and had left two wives and five children on Cape Barren Island. The female half-castes and native women were very expert in catching seals. In fact, they were the sealers of the Straits. Their white husbands and fathers did little more than collect and sell the results of female industry. As an incentive to exertion, if the females showed any tendency to relax their efforts, it was not uncommon for these white devils to fasten their women to the ground, face downwards, and put coals of fire and hot ashes upon

their naked backs! If a variety of surnames suggests the extent of population, then the twenty-five or thirty names which were well known during the first quarter of the century must indicate a much larger population than that of to-day, when the different family names are reduced to some eight or ten.

It is a common belief that the present inhabitants of Flinders Island are the descendants of those who were deported from Tasmania in 1835. The survivors of those who were taken to the Furneaux group at that time, and all their descendants who were alive when that settlement was abandoned, were removed to Oyster Cove in Tasmania; not one of them was left here. An attempt was made to capture the other natives who lived here then, and who were mostly the wives of sealers. The attempt was not successful. The native women hid themselves in the obscure recesses away up the rugged sides of Mount Munro until the government ships had left; then they came down and rejoined their husbands. It was from these that the present inhabitants have come. Of this fact the half-castes are as jealous as they are proud.

In 1851 the discovery of gold in Victoria caused an inrush of people to that colony from all parts of the world. The gold fever affected the sealers and half-castes of the Furneaux group. The escaped convicts and other questionable characters of Tasmania were not slow to perceive the facilities which this group offered to reach the land of gold. Making a convenience of the islands, they compelled the half-castes and others to act as pilots and seamen on board the various craft which cleared out of Tasmania without the consent of the owners or the authority of the Department of Customs. This was the period of the Straits Exodus. It caused a complete and lasting change to come over the social condition of the place. Old family connections were severed and old homes broken up never to be restored. Of all who went to the goldfields and actually worked there not one ever came back. The few who went with that intention, and returned, never got beyond the sight of the salt water of Port Phillip. These obtained work on the shipping at the proverbially high wages of those days, and when weary of that work they returned to the islands again; but their number could be counted on the fingers of one hand, and it is mainly from these few that the present race has come. It is, no doubt, a fact that many honourable and prosperous families scattered over the seven provinces of Australia owe the foundation of their prosperity to the goldfields of Victoria and the origin of their families to the mixed races of Bass Strait.

Old John Smith, who died in 1898, was the last connecting link between the old days and the present generation. He was born in 1821, at Chew-Tobacco Flat, in the interior of Flinders Island. His mother was Nancy, a native of Tasmania. John was a typical half-caste. He was remarkable for strength of body and strength of will, the latter when it suited him. In the days of early manhood he had taken a full bag of flour under each arm, and, without losing his balance, leaped from combing to combing of an ordinary whaleboat!

A Tasmanian constable—a very clever man, too—was chosen for his ability in getting evidence upon any matter upon which he set his mind, to inquire into a certain wreck which happened in the Straits,



with a special reference as to what became of a quantity of goods. John Smith knew all about the matter, and in that respect could be a veritable gold mine to the constable.

John Smith was fond of liquor also. He was plied with this until he became loquacious and songful. He spoke glibly about the wreck, and about everything he knew or imagined in the heavens above and in the earth below, but not one word about what the constable so much wished to know. The liquor was mixed in every conceivable way calculated to ensure the requisite information, but without any success. Towards midnight John Smith was full to the neck. He uttered a sound which alarmed the constable. It was a half-caste snore, and John Smith was fast asleep. A half-caste snore is a sort of cross between a yawn and a pistol shot.

The constable confessed afterwards that he really thought he knew more about the wreck before he went to the islands than he did afterwards. John Smith told me it was the grandest drunk he ever had; for all the time he was being plied with liquor he was reading the constable like a book. During the last few years John Smith became very serious with regard to religious duties, and died with every evidence of Christian hope and resignation.

From the earliest childhood the half-castes are taught to say, "I don't know." Around their camp fires, if one should talk too freely about the past, he is sharply stopped with the reminder that a grass-tree may have ears. Consequently, as witnesses, their evidence is absolutely unreliable. To judge from the variety of features in those who bear the same name, there must have been a paternity more varied than the mere names would suggest. The male progenitors of the present race came from many parts of the world, and included English, Irish, Scotch, German, Maori, and even Jewish, blood; and, like the tatu of the New Zealander, they unmistakably carry the evidences of their lineage in the expression and conformation of their features. Such a mixture of races may largely account for their many conflicting social ideas and habits. The aboriginal nature is very tenacious of its existence, and in these it asserts its power, in a very marked degree, in reverting to the mental and physical character of the dark races, and it is these which have the strongest constitutions to resist the attacks of disease which so readily prove fatal to those who show most of the white nature. The latter, who evince a taste for learning—a liking for the refinements of civilisation and a stronger attachment to religious duties, are the first to sicken and die. This is so well understood by the survivors as to make them rather indifferent to the efforts made to raise their mental and moral standard. They are very fair mechanics when under the constant supervision of a capable leader, but sadly fail when left to their own resources—with the one exception of boat-building; in this they are highly successful. The half-castes can only copy—they originate nothing. Should they adopt a new and useful idea, they soon tire of it and revert to the old again. A dozen will spend hours in trying to spear fish when it would be difficult to get one of them to use the hook and line. Cape Barren Island is only about eight miles wide and twenty-five miles long, yet these people are unacquainted with its interior. They are afraid to go out of sight of water. One family settled at Garland Grove on the south side, and for a long time

when evening came they would prefer to sleep a little above high-water mark rather than in their huts, which were not a quarter of a mile inland. Another family settled at Sandford Bay, three miles to the north, and when visiting each other they always went by the sea coast, which involved a journey of some ten miles—when they could have done it in three.

Mount Munro, which rises some 2,300 feet above the sea, has only been ascended by two half-castes, and only then in company with myself. I had a standing offer for five years, of a bag of flour, a pound of tobacco, besides tea, sugar, etc., for any one who would find for me, say, a five-acre patch of land among the peaks of Flinders suitable as a site for a mountain hut and situated at least 1,000 feet above the sea. I never had a claim for that offer, although many such places could be found within three miles of the coast, as I afterwards discovered in my rambles among those hills. They hunt along the coast of Flinders, but seldom go more than a mile from the shore, unless to make a bee-line across the narrowest part from east to west. It is probable that this attachment for the sea is inherited from their maternal ancestors, who came from the coast tribes of Australia and Tasmania. The fact, too, that they have no idea how to make the weapons used by the aborigines, and know absolutely nothing of the old native songs, is to be accounted for by the same maternal ancestry; because instruction in all these matters and the initiation into tribal secrets, honours, and privileges, was intended only for males and was given only by men. If a few aboriginal fully-fledged bucks had come to these islands the social and domestic character of the present race would have been distinctly aboriginal.

I repeated a few snatches of the native songs used in the Australian Corobberree to some of these people, and, judging from the peculiar glitter of their eyes and the irresistible inclination to sway their bodies to the rhythm of the music, I was shown how the old nature was touched. The fact is, they will go backwards and downwards with great facility to aboriginal habits, whereas progress in what we call civilisation is to them irksome, if not positively offensive. The degradation of these half-castes is towards the wildness of nature. If girls should become what we call unfortunate, they are not so classed, nor treated with the contempt which is so common to civilisation. They are rather pitied; their offspring are well cared for, and no inferiority is attached to the accident of birth. In time these so-called unfortunate girls will marry and become the virtuous mothers of children and make good and devoted wives. Perhaps this is because the whole race had its foundation in that substratum of "misfortune." I am very strongly of opinion that their virtues are purely natural and come from their maternal ancestors, and that their vices are mainly due to their forefathers, whose associates were mostly lawless adventurers or escaped convicts.

They set but small store upon the value of time—that is thoroughly aboriginal; so is their want of human providence or forethought. They are fairly good boatmen, but they will not undertake a voyage unless the weather is absolutely settled and favourable. They never run any risks in that, hence their immunity from disaster at sea. They

will think little of waiting two or three months for a good wind, during which time I have known white men to make three trips. The number of their boats wrecked during the past eight years has been,—to my mind, almost phenomenal; but not one has been lost at sea—most of them have resulted from defective moorings. Their want of forethought is seen in their unwillingness to plant vegetables at the proper season; and, although they are so fond of the flesh of the sooty petrel (or mutton bird, as it is locally named) and their chief source of income is derived from the sale of tens of thousands of these birds, which they catch and salt for white people, yet they cannot be induced to keep a supply for their personal needs. I may say that in this respect the white men who have married half-castes are, as a rule, equally improvident. I buy my birds at 10s. the hundred; but three or four months after the season is over I could, if so disposed, sell them at the rate of 40s. or 50s. the hundred to the half-castes themselves. They will make a sort of wickerwork fence around their gardens, and this has to be renewed every two years. They would rather do this than put up a good post and rail fence which would last a lifetime. They are of a roving disposition, and it is simply marvellous to us how we have kept them together for a period of eight years, when their usual habit was to shift camp every few weeks or months. This is the one solitary glimmer of hope that I can see of their ultimate adoption of settled civilised habits. The constant pressure of a civilising example may permanently affect them for good. They are a people with chronic grievances which, unwisely for themselves, they inflict upon all and sundry visitors to their islands. The actual necessities of physical life are plentiful and at the command of all. Hard work, as understood by white people, is unknown to them. When they are not eating, sleeping, or dancing, they occupy their leisure in discussing their grievances. They think that their colour alone entitles them to special favours, and they are encouraged in this by the few white men who have married half-castes. These men really go so far as to say that each white man who marries colour should be rewarded with a gift of fifty acres of land, for the interesting experiment of multiplying so peculiar a race. The commercial spirit of the age and common sense have very wisely resisted such a demand.

The females especially have at command two distinct voices—one is gentle and refined, quite pleasing to a cultivated ear, and is used when they are pleased with themselves or are desirous of pleasing others; the other voice is hard to a degree and horribly guttural and exasperating, and is employed under excitement or when they do not care whom they annoy. It would take a very clever white female artist months of study and practice to produce a fair imitation.

The men are timid and shy rather than strictly cowardly. When they do wrong they never seem to think of the possible consequences. For one hundred years they have lived without the restraints of British law, so that even compounding a felony is to them the ideal of justice and fair play. However, taking a many-sided view of them, I think that with a community of white people, descended from sea rovers and convicts and left to their own resources, as these have been, for generations, the best of them would have been much worse than the very worst of the half-castes of the Furneaux Islands.



Their use of the English language was correct and really charming, but frequent visits to the mainland have given them a taste for the slang of the streets and that horrible pronunciation and drawl which has become distinctly Australian, especially where the vowel "a" is sounded as "i." "John," said the keeper of a fruitshop in Launceston, "give this lidy a pound of gripes." "Gripes at sixpence a pound!" I exclaimed; "you can get them for nothing in the islands, or even the greater luxuries of diarrhoea and English cholera!" I much fear that this linguistic horror, having come to these islands as an amusing visitor, will remain a serious and permanent resident.

With regard to colour, some of them are as dark as the darkest native I ever saw, and, to hear them express their thoughts in pure, high-toned English was a delightful experience, and nothing I ever heard was so absolutely comical as their acquisition and use of the new development in Australian speech.

As a race, I do not think that they will ever be very numerous; each generation gives evidence of physical and mental weaknesses unfavourable to any steady and permanent increase in numbers. Could they be induced to settle amongst white people on the mainland, their personal and relative condition would be improved, and in time they would become absorbed into the general population. They will not do this; but they will cling to their island homes and habits until, one by one, they are gathered to their fathers.

## THE TRANSVAAL.

The following extracts, from the Statesman's Year Book, 1899, may be of interest at the present time:—

### AREA AND POPULATION.

The area of the Republic is 119,139 square miles, divided into 20 districts, and its white population, according to a very incomplete census of 1896, is 245,397, of whom 137,947 are men and 107,450 women; the native population in April, 1896, was estimated at 622,500. The State Almanack for 1898 gives the population as follows: whites, 345,397 (137,947 males and 107,450 females); natives, 748,759 (148,155 men, 183,280 women, and 417,324 children); total population, 1,094,156. The boundaries of the State are defined in the convention of February 27th, 1884—since altered by a supplementary convention, by which the former New Republic (Zululand) was annexed to the South African Republic as a new district, named Vrijheid, and by the terms of the Convention regarding Swaziland, ratified by the Volksraad, August 20th, 1890, by which Swaziland comes under the administration of the Transvaal. The seat of government is Pretoria, with a white population of 10,000. The largest town is Johannesburg, the mining centre of Witwatersrand goldfields, with a population within a radius of 3 miles, according to census of July 15th, 1896, of 102,078 (79,315 males and 22,763 females). The population consisted of 50,907 whites, 952 Malays, 4,807 coolies and Chinese, 42,533 Kaffirs, and 2,879 of mixed race. One third of the population of the Republic are engaged in agriculture.

### RELIGION.

As no census has been taken the following figures must be considered approximate:—

The United Dutch Reform Church is the State church, claiming 30,000 (1895) of the population; other Dutch Churches, 32,760; English Church, 30,000; Wesleyans, 10,000; Catholic, 5,000; Presbyterians, 8,000; other Christian Churches, 5,000; Jews, 10,000.

Whittaker gives the following particulars:—

The area (including Swaziland 5,560 sq. m.) amounts to 119,200 sq. miles; the population probably exceeds 750,000, of whom only 150,000 are whites. The latter include 63,000 Transvaal Boers and 87,000 Uitlanders, 80 per cent of whom are probably British subjects. In 1896, 451,801 natives paid the hut-tax.

## CHINA.

## CURIOUS CUSTOMS AND HABITS OF THE PEOPLE.

By Mrs. A. LITTLE, of Shanghai.

[Addressed to the Society in the Library, January 21st, 1899.]

AN interesting lecture on the Valley of the Yang-tse-Kiang was given by Mrs. Archibald Little, of Shanghai, to the Manchester Geographical Society, in their rooms in St. Mary's Parsonage, on January 21st, 1899. Mrs. Little, in company with her husband, Mr. Archibald Little, has traversed practically the whole length of China's principal river, and the numerous lantern views thrown on the screen in illustration of her journeyings were all photographed by herself, many of them, owing to the difficulties of the situations, only being secured with great inconvenience and at considerable personal risk. At the outset Mrs. Little expressed much surprise that Manchester people had utterly failed as yet to realise the commercial possibilities of Western China. There was some remissness in this, because the great waterways of that country had all been open to steam navigation since last June, and there was no reason why a steamship company should not be formed to carry goods direct from Manchester to Hankow, 700 miles up the great Yangtse River, returning freighted with Tibetan wool, waste silk, ducks' feathers, eggs, musk, rhubarb, silk, and the various products of Western China. These regions were inhabited by a teeming population, and it had been truly said that instead of digging you had only to "tickle" the soil to produce several crops during the year.

Mrs. Little then described her journey along the precipitous gorges of the Yang-tse-Kiang, the entrance to which lies about a thousand miles up the river. The best time to travel in the district is undoubtedly springtime, for then all the trees are heavily laden with sweet-scented flowers, and the ground is covered with enormous clusters of large white roses, honeysuckle, and innumerable other flowers, making it look like a fairy garden; while the stalactites and stalagmites of the fantastically shaped limestone rocks, which so prettily decorate Chinese gardens, are completely covered in April with luxuriant tufts of green maiden-hair and with the Chinese primrose, a delicately-scented flower, somewhat like the English primrose. So swift is the current of the river in some parts, and so difficult is it to make a passage, that the crew, who generally number about twenty, are compelled to land and clamber over the rocks, dragging the boat along, whilst a hundred additional trackers help them at the rapids. At other points it would be practically impossible to proceed at all if it were not for the breeze which invariably comes up the gorges every afternoon. One curious feature of the river is that it always seems to cut its way through the highest hills it can find. From the entrance to the gorges all English fashions and many of the conveniences of civilisation, such as steamers and

railways, are left behind, and there is hardly a path where two persons can walk abreast. At one place the fashionable promenade in winter is the bed of a river; but with pools of water and the bodies of dead dogs lying about in every direction it is not exactly a spot which would meet the requirements of a European.

The Chinese religion has been described as wind and water, or climatic superstition, and many of their ideas are certainly quaint. In some districts anything in the form of a spire opposite a house door is strongly objected to because it is thought to be the reason of the residents' money going into the pockets of strangers. Overlooking a small town close by the entrance to the gorges stands a pyramid-shaped hill which is said to be continually menacing the young men of the place, and preventing them from distinguishing themselves at the examinations. A short time ago it was felt something must be done to keep it in check. Accordingly all the people taxed themselves and built a temple on an adjacent hill to terrorise the pyramid; and, strange to relate, the very next year two of the young men of the city brilliantly passed the examination. Occasionally along the valley and gorges pretty little shrines are met with cut in the rocks, and every now and then solitary trees are to be seen which must not be touched or molested, or the whole province is expected to suffer. On certain rocks also no fires are to be lighted, or certain towns, sometimes perhaps a hundred miles away, are destined to be burned to the ground. At one point part of the hillside recently fell in, and made the rapids much more difficult to pass than before. The natives immediately gave them the name of the "New Glorious Rapids," believing that by so doing the passage would be rendered less troublesome. The far end of the gorges is indeed a land of legends and songs, and occupies a similar position to our own Borderlands in that respect. It is the place where rival kingdoms constantly contended, and chains are still seen there which used to be thrown across the river in times of war to prevent the enemy's junks from coming any farther. Fung-tu, where the "Emperor of the Dead" lives, just as the "Emperor of the Living" resides at Pekin, is supposed to be full of the spirits of the dead. Whenever a Chinaman dies in any part of the world a letter is written announcing his death to the "Emperor of the Dead," burnt, and thus posted. One of the wonders of Fung-tu is a sacred well, said to be bottomless. In the words of Mrs. Little: "All the people make pilgrimages to it, and if you have any reverence you take a piece of paper, burn it, and throw it down. I burned some, but could not throw it down because it was nearly choked up to the top with paper." The respect of the Chinese for written characters is profound. Every scrap of paper with characters on is collected and carried to some temple to be burned. This neighbourhood in old times was a great fighting one. Every five miles there were beacon fires to announce the coming of the foe, but as fuel is now scanty and dear these have been replaced by beacons of clay, which are periodically painted red by an appointed official—so that the description of China as the "Land of Shams" is not altogether without foundation.

The suburbs of our English cities, continued Mrs. Little, are greatly disfigured by the number of cheap houses run up, in which, I suppose, young men establish their young brides and begin housekeeping. That



is not the case in China. The bridegroom brings his wife to his parents' roof, and on every such occasion all that happens is that another wing is added to the house. In the country this practice is exceedingly advantageous, ensuring safety, society, and conveniences of education; for with so many people living together there is less fear of attacks from marauders, and the children can have the benefit of the services of a private tutor without the family resources being severely taxed. The affairs of the household are regulated by a family council, and the oldest man always has the casting vote. One custom of the Chinese she certainly could not recommend for adoption in this country. Every now and then the authorities decide that a town is improperly built and must be bodily removed elsewhere. Sometimes it is thought this or that rock is rather dangerous, or that it will be wise to get out of the way of the river. Instead of fortifying the towns some high, steep hill in the immediate vicinity, to which the inhabitants can retire in case of need, is selected. Trade guilds in China are a great institution, and provide an object lesson for English trade unions, being clubs, information bureaux, free registry offices, free burial societies, all in one. Their buildings are useful and beautiful, and immensely rich in gilt; the decorated roofs being covered with the figures of little animals, which, with true Chinese realism, are chained down so that there is no chance of them running away.

The manners of the people leave much to be desired in many respects. One of the most disagreeable things a lady experiences in China is the repulsive stare of the people. In some cities it is almost impossible for one to walk about without attracting a large crowd, who follow her to every place she visits, and sometimes, in order to satisfy their curiosity, actually attempt to pull down the house where she is stopping, by inserting their fingers into every little crevice to be found. At one inn where we stayed, Mrs. Little explained, we had to barricade the windows and doors, and wait until the crowd were tired of attempting to see us. We had posted our soldier servants all round, but they had gone to dinner and the people were determined to pull the place down. On that occasion I knocked three Chinamen to the ground with my own hands, and yet it is said they would make such splendid soldiers. We deemed it expedient to leave the neighbourhood before daybreak. Just before we left Kiang-Pei, a city near Chung-King, a new medical dispensary was founded there. Dr. Macartney, of the Mission, one day instead of going over to the dispensary and taking possession of it, arranged a dinner party in honour of Mr. Little, and two Chinese medical students proceeded to the dispensary in his place. On arriving there a mob, incited by some gentry, dragged them out and horse-whipped and assaulted them in a most brutal manner. One of them got his hands free and escaped, but the other was beaten to death, and his naked body flung over the city walls. On being apprised of what had taken place, however, the American Government, perhaps owing to the Cuban troubles, telegraphed to the consul not to demand immediate redress, but to temporise. This was the worst thing that could have been done, for even to this day, I believe, no foreigners dare set foot in Kiang-Pei. If redress had been demanded the people might have been taught to respect life; but as it was, the local militia, numbering several thousands, established

themselves on a small island in the river and actually threatened the premises of the London Mission and others with blank cartridges, and for at least a fortnight the whole place was in commotion.

Foot-binding and opium are the two great curses of China. The former is a horrible custom. No foot is considered properly bound until the fleshy part is drawn so near to the heel as to make a crevice there big enough to conceal half-a-crown, and all the toes then appear on the other side like white earth-worms. You can imagine how the toes mortify and drop off. It is rare, the doctors there say, to find a lady's foot with all the toes on. Paralysis and other serious illnesses frequently result, and never a day passes in the houses of the richer classes without the women suffering from the pain. The foot of one lady in Chung-King, measured from the tip of the toe to the end of the heel, was not as long as my thumb. The agony suffered by the little girls during the period of binding is exceedingly great, but I don't think it compares with the sufferings of the women afterwards. Happily a movement has been begun to abolish the practice, and proportionately to the trouble taken never was a society more successful than that to which I act as organising secretary. The results have been simply enormous. The young men especially are giving the movement their warm support, and already the heads of thousands of families have promised not to bind their daughters' feet nor to marry their sons into families where the custom is continued.

#### AN ESTIMATE OF THE NUMBER OF JEWS IN THE WORLD, 1899.

Russia (including Russian Polish Jews, 1,300,000) .....	4,500,000	Switzerland (1897) .....	9,000
Austria .....	1,100,000	Denmark .....	4,000
Hungary .....	700,000	Sweden .....	3,800
Germany .....	560,000	Norway .....	500
Roumania .....	300,000	United States (350,000 in New York) .....	930,000
Great Britain and Ireland.....	150,000	Australia .....	11,000
European Turkey .....	120,000	South America .....	12,000
Holland (1890) .....	98,000	Asiatic Turkey.....	150,000
France .....	72,000		
Algiers .....	49,000		
Italy .....	50,000	Total.....	8,819,300

The gradual growth in the number of Jews in Great Britain and the United States of America is very instructive.

At the beginning of the present century there were only about 14,000 in this country. In 1874 the number had increased to 50,000. The number is now trebled.

In the United States there were in 1812 1,000, in 1818 3,000, in 1840 45,000, in 1877 189,000, in 1888 400,000. Within the last 10 or 11 years 530,000 have been added.

These figures, published by the *Edinburgh Evening News* from estimates prepared by the Rev. M. de la Roi, of Berlin, are evidently not complete. South Africa, Tunis, North Africa generally (except Algiers), and other places are not accounted for. It is difficult to estimate the numbers, but the probability is that about 10,000,000 may be taken to be fairly correct.

Mulhall in 1880 gave an estimate of 6,292,000. Some of his figures are interesting for comparison, he gives Russia 2,621,000, Austria 1,375,000, America 1,300,000, United Kingdom 50,000. (See page 527 "The Progress of the World.")

## CHRISTMAS AND NEW YEAR WEATHER IN EDINBURGH.

A STATEMENT appeared in the *Daily Graphic* the other day (December 27th) that this year's weather has remained abnormal to the last, including Christmas Day, December 25th, as abnormal also, and is therefore called a balmy Christmas instead of a severe Christmas as expected.

Much the same ideas seem to be entertained by other newspaper correspondents, who are all grumbling that this Christmas turned out not to be a seasonable or typical Christmas so-called.

Now, on looking over my weather diary for the twenty years registered for Edinburgh chiefly, I find that the weather we are experiencing at present seems to be the real typical weather, and that the Father Christmas "seasonable" weather is very exceptional, and turns up but rarely.

It only appeared here with snow in 1890 and 1880, and with frost in 1892, 1886, 1884, and 1880, so that the average Christmas really only looks "unseasonable," and balmy unexpectedly.

The weather for New Year's Day for twenty years here turns out on inspection to be much the same as that at this Christmas, as there was snow only in 1895, 1893, and frost only in 1893, 1888; all the rest of the days were balmy and "unseasonable" like the Christmas at present.

The severer weather with snow and frost appears not to begin till the first or second week in January generally here, and this late arrival tends to produce the cases of sickness and mortality which the balmy Christmas had staved off from its mildness.

Hence seems the appropriateness of the old saying that a green Christmas makes a fat churchyard afterwards.

The traditional Father Christmas weather seems thus to have disappeared in later years entirely, and only survives now as a pantomimic memory in the pages of the novelists, and illustrated journals, and theatres.

That such historic reminiscences were founded in fact, may not be seriously challenged till a full reference was made to the meteorological records of a century.

We may in the mean time admit it, and suggest that the British weather may be much changed by the introduction of extensive drainage over the country side moors and bogs, drawing off the water, and by the yearly increase of the extensive network of railways and telegraphs affecting the atmospheric electricity.

Some explanation of the discrepancy assumed to exist may be elicited by referring it to the alteration of the season terms effected by the old style of calendar in the last century, and the new style in the present century, which placed the New Year twelve days earlier.

It may be suggested that this alteration of British climate may have reference only to the land itself of the country, and not to the seas and oceans surrounding it, which seem to maintain their wintry character all round Britain by storms, wrecks, collisions, breaches, and loss of life.

The favourable nature of the winter seasons here might induce travellers and valetudinarians to consider Edinburgh as a suitable place for a health resort at that time, instead of the Riviera, with the perilous character of the journey thither.

W. G. BLACK, F.R.M.S.

Edinburgh, January, 1899.



## CHRISTMAS WEATHER.

		SNOW.		FROST.		RAIN.	CLOUD.
1898	.....	None	.....	None	.....	R	C'd.
1897	.....	"	.....	"	.....	R	C'd.
1896	.....	"	.....	"	.....	R	C'd.
1895	.....	"	.....	"	.....	O	C'd.
1894	.....	"	.....	"	.....	R	C'd.
1893	.....	"	.....	"	.....	O	Fine.
1892	.....	"	.....	Frost	.....	O	Frost.
1891	.....	"	.....	None	.....	O	C'd.
1890	.....	Snow	.....	"	.....	Sn.	Fog.
1889	.....	None	.....	"	.....	O	C'd.
1888	.....	"	.....	"	.....	R	C'd.
1887	.....	"	.....	"	.....	R	C'd.
1886	.....	"	.....	Frost	.....	O	Fair.
1885	.....	"	.....	None	.....	O	C'd.
1884	.....	"	.....	Frost	.....	O	O.
1883	.....	"	.....	None	.....	O	C'd.
1882	.....	"	.....	"	.....	O	C'd.
1881	.....	"	.....	"	.....	O	Fine.
1880	.....	Snow	.....	Frost	.....	Sn.	C'd.

Edinburgh,  
*January, 1899.*

W. G. BLACK, F.R.M.S.

## NEW YEAR WEATHER.

		WINTER.	SNOW.	FROST.		RAIN.	CLOUD.
1898		.....	None	.....	None	.....	R Mist.
1897	—Jan. 9th.	.....	"	.....	"	.....	O Fine.
1896		.....	"	.....	"	.....	R C'd.
1895		.....	Snow	.....	"	.....	O C'd.
1894	—Jan. 2nd.	.....	None	.....	"	.....	O C'd.
1893		.....	Snow	.....	Frost	.....	R C'd.
1892		.....	None	.....	None	.....	O Fine.
1891		.....	"	.....	"	.....	O C'd.
1890		.....	"	.....	"	.....	O C'd.
1889	—Jan. 3rd.	.....	"	.....	"	.....	O Fog.
1888	" 2nd.	.....	"	.....	Frost	.....	O C'd.
1887	" 4th.	.....	"	.....	None	.....	O C'd.
1886	" 4th.	.....	"	.....	"	.....	R Gale, S.W.
1885	" 6th.	.....	"	.....	"	.....	O Fine.
1884	" 11th.	.....	"	.....	"	.....	R C'd.
1883	" 25th.	.....	"	.....	"	.....	R C'd.
1882	" 6th.	.....	"	.....	"	.....	R C'd.
1881	" 7th.	.....	"	.....	"	.....	R C'd.
1880	" 15th.	.....	"	.....	"	.....	R Gale, S.W.

Edinburgh,  
*January, 1899.*

W. G. BLACK, F.R.M.S.

A LADY'S NOTES ON RESIDENCE IN QUEENSLAND.

Shelley's Creek, Kholo, near Ipswich, Queensland,  
May 5th, 1897.

MY DEAR A—,

I was delighted to get your letter last week; it seemed like *old* times to see your writing. I scarcely remember what I told you in my last letter, therefore you must forgive me if I repeat some things.

Just before Christmas the heat got intense, and continued so until February; many days the thermometer registered over 90 deg. in the shade; a few times it ran up to 100 deg. at noon, but the nights were cool; we seldom had such warm nights as we used to get at home during summer. The heat agreed splendidly with me, but it made F—— very limp, and even affected his spirits; however, as soon as the weather got cool, he became as lively as ever. Winter has now begun; May here corresponds to November at home, so the almanac says; it must mean only in reference to the commencement of winter, because the weather is now delightful, mornings and evenings cold enough to brace one up, and the days comfortably warm and sunshiny. To keep warm early in the morning one needs extra clothing and brisk exercise, the temperature usually being 46 deg.; by noon it rises to about 80 deg. in the shade. Want of rain has made the ground dry up, and vegetation looks brown instead of green. February is usually the rainy month, but this year very little fell, and we have had only one or two showers since, so things are looking serious in this district. Many farmers on the plains at Marburg and Rosewood have had, for months past, to cart water from the Government dams—in some cases eight and ten miles distant. We are on the river Brisbane; both Brisbane and Ipswich Waterworks are on the river below us. Shelley's Creek runs through our land; this creek has never been known to be dry, so between the river and the creek we have a plentiful supply. Being on the river bank is a boon in dry time, and, on the other hand, when the river is up we are likely to get flooded. The house is on a bank about 200 yards from the river, and to see the depth and distance one cannot imagine the water coming near the house, but in 1893 the water was several feet high in the house, and last year it was within sight of it. The marks left by the 1893 flood are so very far from the river that one is amazed: old trees and logs are left on high banks, branches are lodged 60 or 70 feet up on living trees on the river bank. When the river is greatly flooded crossing is dangerous, and nobody goes to town unless obliged. Kholo Bridge (six miles from here), where we cross to go to town, has been under water once this year—in February; the water soon fell, but left a wash round, and one market day, when J—— crossed with the trap and a pair of horses, the animals had to step down off the bridge into nearly three feet of water. They are staunch horses, and will go through anything; if they had not been well tried he would not have ventured. Bessie, the outrigger, can swim like a dog. I fancy the Australian horses are more sensible than those at home; they are certainly not so handsome in shape, so perhaps the deficiency is made up in sense.

The formation of the land surrounding us is very curious—ridges, pockets, and gullies. I wish I could sketch, because I do not think you can imagine anything like it from a written description; it looks as if a tremendous waterspout had burst over the top of several high hills and the water in rushing down had made innumerable wide channels, which are now covered with grass, ferns (bracken), and trees. In winter it is warmer on the ridges than on the plains, and in summer cooler. Bananas and pine-apples will bear fruit on the ridges, because the frost does not fall there. We have banana plants round our dairy for shade; they look fresh and cool in the hottest weather, but bring no fruit, because we are just low enough to get a little

frost during winter. The river Brisbane drains an immense area of country—hundreds of miles—and when rain falls up the country, as well as in this part, a flood is the result. There is a code of signalling at farms along the bank, and folks get notice of impending danger two or three days beforehand; one of the farmers at the bridge is responsible for warning us. The river winds and twists like a snake; in driving to town we get views of it first on our right hand, then on our left, and so on; for instance, the distance by road from Ipswich to Brisbane is 24 miles, and by river 50 miles. There is a great variety of soil about here—black, brown, sandstone ridges, gravelly; the scrub land is much richer than forest land. We are on forest land, but fortunately in a fertile pocket of the river. To fell and clear all the trees on new land would cost a fortune, so the usual plan followed is to fell the finest trees and sell the timber (if within reasonable distance of a market), then ring-bark others. In case you have not heard of ring-barking, I must tell you how it is done. About three or four feet from the ground a ring is chopped through the bark right round the tree, and after a time the tree dies, but remains standing upright for years, looking like a spectre among its living brethren. You can scarcely imagine how weird and dreary hundreds of such trees make a paddock look. I am sure nobody would have ring-barked trees on their land from choice; but, of course, dead trees do not need support, and what would have gone to nourish them nourishes the pasture instead. In windy weather rotten limbs and branches fall off these trees, so there is always plenty of clearing to be done. Mr. K——, our predecessor, had done very little clearing; last winter our folks had plenty of bonfires, sometimes fifty burning at once. We had a few soon after our arrival, and very exciting it was to go out at night and help “log up.” F—— enjoys gathering piles of wood together; we hope to get rain before the “Record Reign Day,” so that we may on that day set at least fifty piles alight. It would be dangerous to fire them while the weather is so dry. We have had a little experience of a bush-fire. In November last our neighbour’s paddock was set on fire through carelessness, and in spite of beating out along the fence, it spread into the top end of our large paddock and burnt freely for more than a day. The men kept beating it back with wet sacks and small trees, but some of the logs and old trees continued smouldering for three weeks, when rain came and put them out.

M—— and I went out with tea and provisions to the men, and had a fine view of the fire. It was a pretty sight; the flames would often shoot up through a hollow tree, and sparks fly in all directions. It was not near enough to the house to make us anxious for our safety, and there was abundance of grass for the cattle on other parts of the farm. All land is divided by a three or four-railed fence, a log fence, or wire and rail fence; we have not seen a hedge since we came here. Gardens, even in town, are surrounded by a paling fence; of course, in the bush such fences are necessary for keeping out “wallabies” and “flyers.” We seldom see the kangaroo proper, but these smaller species are to be seen almost any day, and very funny they look jumping along the ridges. Kangaroos, rats, and bandicoots have a bad time on the near paddocks, for our two dogs are fond of hunting, and often go off by themselves; our cats also catch bandicoots. There are water-snakes in the river, but our folks have seen only one since they have been here. My little nephew will be two years old in July; he is a sturdy boy. We used to hold him in the water before he could walk alone, and he would sit in it and splash vigorously. His father wants to teach him to swim and to ride as soon as possible. Most of the children, girls and boys, about here are experts at both. M—— and I were afraid that commencing to ride when very young would tend to make his legs crooked, but since taking particular notice of boys and young fellows in our neighbours’ families we see it makes no difference. C—— can keep his seat on horseback with or without a saddle, and without being held, while the horse is being led round the garden. Last time he was mounted he insisted on carrying the stockwhip in one hand, just as his father does. A stockwhip has a short handle and a lash about 15 feet long. I like to hear it properly used, the crack echoes along the ridges finely. One of our neighbours can cut a snake in two with his stockwhip without getting off his horse. We have seen a few snakes this summer during our walks. F—— has killed two, and I saw the men kill one up at the



milking bales. One afternoon the girl saw a black one (venomous) run under the house near my bedroom; we had the dogs in to hunt for it, but could not find a trace. We pulled down a rockery, thus uprooting our only bed of mignonette. I was nervous for several nights, and used to look all over the room and into my bed, but soon forgot and could rest in peace. That was the only reptile, except lizards and frogs, that we have seen near the house.

The insects do not worry me; it is strange how soon one gets used to such things. We have very few mosquitoes here, but the town houses are infested all the year; we do not need mosquito curtains for more than four months of the year.

During February we spent a week in town, and came home well spotted with mosquito bites. Ipswich is one of the coal-mining centres; there are some good mines at Tivoli, and the Aberdare Colliery employs a large number of men. Mr. Lewis Thomas, the owner of the latter, has made a fortune there, and is a most generous man. The Queensland Railway Sheds and Works are also in Ipswich, and it is a busy place. Some parts of the town are very pretty, but the part nearest here is very barren-looking. J—— has bought 230 acres of land about  $2\frac{1}{2}$  miles from town, and we should have been living there now if the usual February rain had fallen; the land was too dry to plough and sow in time to get green crops for winter use, and we had to remain here.

This morning J. and P. F—— have taken some stock to the new place; we have a bush carpenter there, repairing the house and fences, and he will look after the cattle till we move there in the spring. The labour of driving produce from here to town is too great, not on account of the distance (10 miles), but the fearful road. It is really dangerous for a vehicle to go over it; our neighbours seldom drive; in fact, few of them have any conveyance; they "hump" (colonial) the butter and eggs in on horseback several times a week, and make their livelihood chiefly by rearing and fattening cattle. We shall use this place for rearing stock. It is a very pretty place; we shall be sorry to leave it, but for F——'s sake shall be glad to be near town. I like the life out here immensely, and wish we had come out here years ago. We are sometimes afraid F—— will not be able to settle down here; it is a great change for him. I will tell you about our new farm after we get there. You must ask questions, because I may not tell you what interests you. You will be enjoying summer weather when you get this letter, and I hope you will all have a thoroughly good holiday. I have read your letter over several times; news of your family and old friends will always interest me.—Kind regards from F—— and love to all the family from your sincere friend,

P. J. W——

---

Ipswich, Queensland, December 22nd, 1897.

MY DEAR A——,

I think I told you in my last letter that J—— had bought a farm on Warrill Creek, two and a half miles from town; we came to live on it the last week in July, and put a bushman in charge of the other place. Before we left J—— took us for several rides further into the bush. One day we went to the foot of Cabbage Tree Range; wild horses, cattle, kangaroos, and all kinds of cattle live in the ranges, and reptiles are not scarce there. It was real bush scenery, the pasture burnt down, creeks dry, except for occasional water-holes; the trees and shrubs were a beautiful green and the sky cloudless. Going along the bed of Cabbage Tree Creek, out of which rugged rocks and a hill covered with dense foliage rose sharply, made me feel solemn.

Another ride we took was to Sholo, to see a real bachelor's hut. The farm was amidst beautiful scenery, but the hut was rougher than our old tool shed on the *Park*, and not much larger; it contained two stretchers (single beds), a table, a few boxes, plenty of tools, cooking utensils, and firearms. The smoke from the open fire blacked everything; the owner, Mr. J. F——, is a fine, smart fellow, and looks well when mounted on his favourite black horse; he warned us that his "humpy" was a very rough one, but in spite of his

warning we were quite taken aback. He spends Sunday in town with his people, and said it was no unusual thing to find opossums in possession of his hut on his return on a Monday, and occasionally snakes would get in. Since we visited him he has had a nice three-roomed house built, and it is reported he is about to be married, but we doubt it, for it is such a wild, lonely place, and the road to it fearfully steep and rough, that few women would have courage enough to live there.

Heavy rain fell the end of the week before we left Kholo, but we did not think it would affect the river. We started early on a Tuesday morning; it was a glorious morning, so clear and bright. All furniture, etc., that we could manage without had been sent on before, and our procession consisted of a dray filled with beds and household requisites, a trap carrying J—, a servant, C— and myself. F—, M—, and our new cousin, R— (she had never stayed in the bush before, and the fortnight spent with us was a novel experience) on horseback. Can you imagine our feelings when, after travelling six miles over the roughest part of the road and reaching Kholo Bridge, we found the river rushing over it? It was a sight! The Brisbane river was, instead of a lovely, clear, flowing river, a rushing, roaring flow of muddy water. We had the dray put into a farmyard near the bridge, took out a few blankets and actual necessities, and returned to our old home, where we had to stay till the Thursday. Plenty of provisions and cooking utensils and a little crockery had been left in the house for the two men, so we were not short of food, but the makeshifts and contrivances to make accommodation for two suit our nine people, were ingenious and most amusing; we had great fun. The family and F— had beds, but we three girls slept on blankets on the sitting-room floor, and washed ourselves in an enamelled preserving pan; one comb and brush did duty among the seven of us. Two chairs, a settle, and a couple of boxes were our seats; the men slept in a hut at the side of the barn; they had one lamp and we the other, but at bedtime it had to go into M—'s room on account of C—, and we groped about in the dark; so also did F—. That was an experience long to be remembered; so also was the crossing of the river on the Thursday morning.

The water was off the bridge, but the road on the town side of it was washed away, and a wash-round about two feet deep, with a rocky bottom, had to be got through. R—'s father and one of our cousins met us; they, with R— and F—, went through on horseback; J— went in the trap, and the rest of us were carried. The two young F—'s are equal to any emergency, and being well used to the river, knew how to manage. We all got over safely, and only wish we could have snap-shot photos. of the whole proceedings to send our friends. We like living here very much, and have made some friends in town, and are also on intimate terms with Mr. and Mrs. S—, our Scotch neighbours; they are exceedingly kind to us. We get lots of visitors, and have more invitations than we can accept. A fortnight ago M—, C—, and I spent a pleasant day with some friends in town. J— took us in the morning, and fetched us late in the evening. We have plenty of birds here, but not so many "possums" and bears as we had on the river, nor such a variety of trees and shrubs; gums, silky oak, and tea trees are the principal here. We miss the chestnut and old apple trees; they are so shady. The chestnut is a beautiful tree, not at all like the English chestnut; the leaves are a different shape and a much darker colour; the nuts (not edible) grow in immense pods, something the shape of broad-bean pods; these trees are evergreen. Beautiful rain fell in the spring, and the gardens have been gorgeous. We had not many flowers in ours, but had plenty given us, often more than we knew what to do with, and the scent would be overpowering; white jessamine, heliotrope, mignonette, tiger-lilies, petunias, marguerites, geraniums, cosmos, phlox, roses in abundance and of numberless varieties. A few weeks of scorching sun in November burnt up many of the flowers but since then we have had cooler weather—very cool for a Queensland summer, often scarcely 76 deg. in the shade in the afternoon, so we still get flowers and vegetables. We have had some terrific storms; lightning, thunder, rain, and wind last night. None of us could sleep; we were afraid the roof would blow off and let the rain in on to us. It was terrible! We get most of the storms in the summer; autumn and winter are the most pleasant seasons here. January and February are the hottest and often most damp

months. We spent a very happy Christmas; our decorations were sunflowers (beauties) and evergreens; our provisions, pudding, mince pies, goose, butter beans, potatoes, apple sauce, grapes, bananas, plums, pine-apples, nuts, raisins, homemade cocoa-nut ice and cake. We had loads of grapes this week; I made some into jelly yesterday. Green-grape pie, if it were not for the seeds in it, would pass for gooseberry pie; it is delicious. Our garden being new and not well-stocked, is the excuse friends make for giving us fruit. We have had two lots of stewing pears; one last week and the other this.

None of the blacks (natives) from the Debbin Creek Settlement have yet visited us. We are told they will surely come begging in the winter, but we must not give them anything or they will be continually bothering us; they are well looked after by Government, also by a committee of townsfolk, who receive and distribute clothing or anything one has to give them. Several trees in our paddock bear witness that the blacks have been there recently. They have no guns; therefore when an opossum, or any game they are hunting, runs up a tree, they climb after it and chip out steps for their bare feet on either side of the smooth high trunks of the gum trees; they handle the tomahawk well, and climb amazingly fast.

F—— is wonderfully well in the cool weather, but cannot stand the heat. I do not think he will be able to settle here, so some day you may see us again. C—— is just racing about the room and shaking the table; he has not had much play to-day, so I do not like to stop him. Yesterday a little visitor we had, accidentally tipped him out of his wheelbarrow, and it quite upset him. Uncle gave me several copies of the "Tourist's Guide to Queensland," and I intended to send you one, but find the one left is for 1891, therefore I will wait until I get a newer edition.

With best wishes for a happy new year, I remain, your sincere friend,  
P. J. W——.

---

## NEW BOOKS.

---

"NOTES ON THE FOLK-LORE OF THE FJORT (FRENCH CONGO)." By R. E. DENNETT, author of "Seven Years among the Fjort." With an introduction by Miss Mary H. Kingsley. 5 plates. Index. 170 pp. London: Folk-Lore Society, 1898.

THIS series of folk-lore stories is told by Mr. Dennett with his usual skill, and gives an interesting proof of his thorough knowledge of the modes of thinking of this West African people. There are two appendices, with notes by Miss Kingsley. The first deals with Nzambi, Kkissim, and the second relates to Fjort songs. The little book is very full of information and in many points is suggestive. It requires and will well repay very close study, and will be very valuable to those engaged in West African work, either as philanthropists or traders.

"MAN AND HIS WORK." An introduction to Human Geography. By A. J. HERBERTSON, Ph.D., and F. D. HERBERTSON, B.A. London. A. & C. Black. 1899. Preface, contents, and index. 118 pp. Price 1/-

THIS little book is one of a series of school text books under the title of "School Geography." Edited by Mr. L. W. Lyde.

Dr. and Mrs. Herbertson have in this small book of fourteen chapters given a most interesting but terse view of Man in all Conditions.

The arguments may of course be used by teachers with other illustrations, and illustrations may be added; for instance, in referring to canals, the Dutch and Gotha Canals might be used and the fact that no large town in Belgium is without a canal, thus giving cheap carriage and affecting very greatly the conditions of life is important. We welcome this handbook very warmly.



## CORRESPONDENCE.

## AN INTERESTING LETTER FROM A SETTLER IN NEW ZEALAND.

Whetukura, Ormondville, Hawks Bay, July 24, 1898.

DEAR MR. SLATER,—I have been thinking about you for some days, but we have been really so busy that I am afraid I am getting behind with my correspondence, building, fencing, stock buying, etc.; one seems to be always going. However, I am thankful to say that we have, I think, got through the thickest. When complete we shall have about eleven miles of boundary fence; so far, we have got about nine miles of it up.

I have just let another two hundred acres of bush to fall, which is to be down by the end of September. I am generally in luck's way if I begin writing to you on an afternoon. I have just had to go out to the stock-yard to boil up a newly-calved heifer. This makes three within a fortnight, so we have had to dry two old cows up to make room for them. This year, on account of the great scarcity of grass, all stock is going at giving away prices. Just fancy, cows three months of calving selling at 25s., 28s., and 30s., according to age. A pen of 36 two-year-old steers sold for 8s. per head. Everyone is crying out for food. We have had such a dry summer and autumn that the grass never got a chance to grow.

I bought 1,400 ewes in lamb at an average price of 4s. 6d. per head; one lambed on its way down. We had some little difficulty in getting them home on account of having to swim a large river, and the muddy state of the road. I want other 600 more yet; I hope to get them next week.

I declare I seem to have less and less time every month. My naturalist pursuits I have had to give up altogether until a more convenient season; even a bit of botany I have not been able to attend to, although, on the other hand, the inclination is still there, and if not engaged at one thing, I am sure to have a cut in at some other.

I discovered only lately that we are living in a part of New Zealand which a hundred years ago was the talk and wonder of all the leading native tribes in the North Island. At that time the great ambition of these man-eating gentlemen was to be able to conquer the tribe living in a portion of my land holding to impregnable pahs (or forts). It appears that it was looked upon by the general body of outside natives that whatever tribe could conquer this race would be entitled to the claim of being not only the leading tribe, but the fact of being able to complete or accomplish a feat which no other tribe could. This was something to hand down from generation to generation. The natural sequence of this was, that the tribes for hundreds of miles round came and had a try to conquer these pahs, known by the name of Te Ringa O Mahuru and Te Pahure. These two pahs stand on the top of two hills, similar to the one that the Norton Water Works is on, only higher, with three perpendicular sides, about 60 feet deep.

The natives from Wanguini, Kaikato, Poverty Bay, and other districts have all had a try to capture these pahs, but all to no use; they have had to retire crestfallen, and go home with their tails between their legs. These pahs were dismantled and deserted about 70 years ago. The Pahure natives had been helping to fight against a tribe which had got possession of the thunder weapons, and when they came back they told such a tale about these guns and the tribe who were in power coming to attack Te Pahure, that a grand council of war was held, at which it was determined to dismantle the pahs rather than they should be conquered. This was accordingly done; all the fine carved facings in front of the chief's house, or whari, and the wharies where their councils were held, were pulled down; these, along with their other valuables, were carried some little distance away, and placed in a cave, the opening afterwards being covered up. This was only known to a few of the leading men, the rest of the tribe being employed in taking the other stores, furniture, mats, etc., and building a pah at Whetukura. All this had to be done in a short time; the women and children were sent away some miles to the care of a friendly tribe. Before finally deserting Te Ringa O Mahuru and Te Pahure, they set fire to all that was left. When the tribe came to attack them they were terribly annoyed to find the pahs dismantled, and swore to kill every native belonging to them and eat them. Accordingly they went forward to Whetukura, when a great battle took place on the banks of the Waikopiro creek, at which nearly all the Te Pahure natives were slain; the conquerors ate as many as they possibly could, and the rest they pitched into the creek, which caused the waters to stink for months after. Consequently the creek was named the Waikopiro, or fouled water creek.

So far as one can learn, no one has been able to discover this cave, although people have tried; but it is so long ago, and the natives who knew, did not say anything about it until all was grown over with trees, and all traces lost. There may, at some future date, be an antiquarian discovery, and these valuable relics unearthed. My neighbour, who owns the land upon which the two pahs stand, does not even know of their existence, although I do not suppose it would matter much if he did. Geologically speaking, they form two rather interesting monuments, pointing out the wear and tear of time; they are capped with large blocks of hard compact limestone, the whole having slipped down to their present position from the sides of the Raikawhia Ranges, a distance of about 40 chains.

I am afraid you will not be interested with all this about New Zealand natives. However, you will see that although it is supposed to have been inhabited only 500 years, still they have in that time left some ancient history, and fortunately we happen to be in the district where this took place. It helps to lend a little interest to the district and to myself.

There are a lot of Yorkshire people living about Woodville, but I have not seen only two or three.

Remember me to all old friends. I follow your excursions, Y.N.U., with extreme interest.—Yours sincerely,

S. CHADWICK.

---

[Mr. Chadwick was formerly a most earnest and valuable member of the Yorkshire Naturalists' Union.]

## PROCEEDINGS OF THE SOCIETY.

OCTOBER 1ST TO DECEMBER 31ST, 1898.

---

The 485th Meeting of the Society was held in the Mayor's Parlour, Town Hall, on Wednesday, October 5th, 1898, at 3 p.m. In the chair, the Rev. S. A. STEINTHAL.

Apologies for the absence of the Right Hon. the Lord Mayor (at a Council meeting), Sir W. H. Bailey, and others were read.

Letters were read from the following:—Mr. Wm. Stanfield, Mr. Arthur H. Furnish, Dr. L. Hamilton, Mr. John Ainsworth, Sir W. H. Bailey, Sir J. J. Grinlinton, Mr. H. Handcock, Mr. J. E. King, M.A., Mr. W. B. Leech, and Dr. A. J. Herbertson.

Sir John J. Grinlinton, A.I.C.E., F.R.G.S., F.S.A., etc., late Member of the Legislative Council of Ceylon, who was formerly engaged on the Ordnance Survey, and who also served in the Crimean Campaign as lieutenant in the 4th King's Own Regiment, and assistant-engineer in the Siege of Sevastopol, addressed the Society on the "Island of Ceylon," where he spent many years. Sir John spoke of the agriculture and natural products of the country, of its commerce, and the government of the colony, and the condition of the people.

Sir John has handed us his

### NOTES ON THE ISLAND OF CEYLON.

(A) The ancient name was "Taprobane," as known by the Greeks; also designated by the Brahmans as "Lanka"—"the resplendent"—and by the Buddhists as "a pearl upon the brow of India"; the Chinese knew it as the "Island of Jewels." It is an island in the Indian Ocean off the most southern extremity of India, lying between latitude  $5^{\circ} 55'$  to  $9^{\circ} 51'$  north and longitude  $79^{\circ} 41'$  to  $81^{\circ} 54'$  east of Greenwich. Extreme length 270 miles, and greatest width 140 miles; area 25,365 square miles, or close on the size of Ireland and about equal to Holland and Belgium.

(B) The "Maldives," a group of seventeen coral islands about 500 miles west of Ceylon, are tributary to Ceylon, and the population amounts to over 30,000. There is a lighthouse at "Minacoy," another coral island 400 miles from Ceylon, which lies in the direct track of steamers running to and from Aden.

(C) Ceylon abounds in interesting relics of great antiquity. The island was described by Rainayana ten centuries before the Christian era. It was also visited by the Greeks, Romans, and Venetians. In 1505 the Portuguese formed settlements on the western, southern, and eastern coasts of the



island, and one hundred years later the Dutch took possession of the Portuguese settlements; and in 1795-6 the English replaced the Dutch, giving Java in exchange for Ceylon. The Government is administered by a Governor appointed by Her Majesty the Queen, assisted by an Executive Council of five official members. The Legislative Council is composed of seventeen members (inclusive of the members of the Executive), of which eight are unofficial, the Secretary of State for the Colonies being the responsible Minister to the Crown and to Parliament. The principal Departments are those of Law and Justice; the Administration of 9 Provinces by Government Agents; the Customs; Public Works; Survey Department; Medical; Educational; Police; Prisons; Railways, etc., etc.; and in each Province there are native Headmen under the Government Agents.

(E) Population at the Census of 1891 was 3,007,789, of which there were: Europeans, 4,678; Singhalese, 2,041,158; Burghers, 21,231; Tamils, 723,853; Moormen, 197,166 (Arab descendants); Malays, 10,133; Veddahs, 1,229 (wild people with no fixed habitations); others, 8,341. According to tradition the Singhalese originally came from the North of India, and this is borne out in many respects, such as in language, customs, and history, the latter dating from about 500 B.C., and from chronicles compiled in Pali in the fourth and fifth centuries B.C. In respect to religion the population may thus be divided (approximately): Christians, 302,127; Hindoos, 615,932; Buddhists, 1,877,043; Mohammedans, 211,995 (Arab descendants); and some others, religion unknown. (Note page 209 of the "Official Handbook of Ceylon," of the Chicago Exhibition.)

(F) Colombo is the capital of the island, with a population of about 130,000. It is styled by many people the "Clapham Junction of the East," it being the port of call for nearly all vessels bound from Europe to Calcutta, Burmah, the Straits, Hong Kong, China, Australia, and the Pacific. The harbour of Colombo, with its splendid breakwaters, is nearly 700 acres in extent, and affords perfect shelter and accommodation to steamers of the largest class in the world. Total shipping annually exceeds 6,000,000 tons.

(G) Kandy is the capital of the mountain zone, right in the centre of the island, surrounded by high mountains, and with a lovely lake 1,500 feet above sea level. The Peradeniya Botanical Gardens, four miles from Kandy, have the finest and most beautiful palms of all descriptions, with giant bamboo clumps along the "Mahavilla Ganga," the largest river in Ceylon.

(G I) Nuwera Eliya, the sanatorium of Ceylon, the highest mountain, Pedrotalagala, 8,296 feet, is just above it. It is nearly 1,000 feet higher than Adam's Peak, which is 7,353 feet.

(H) Anarudhapura, the ancient capital of the north of the island, a city which was in its zenith 500 years B.C. The ruins, which have been exhumed, so to speak, show how advanced the people were in those days in architecture. There will soon be a railway running past this old place. The city was destroyed at some period unknown, but certainly over 1,200 years ago.

(I) GEOLOGY.—Principal rock, "gneiss," with crystalline limestone and extensive beds of "laterite," locally named "cabook." Plenty of iron found all over the mountains and hills, and also in the low lands south, east, and west of the zone, but not a single trace of coal. Precious stones of many kinds: Cat's eyes, sapphires, rubies, cinnamon stones, moon stones, etc., and last but not least, pearls on the north-western bank of the island.

(J) SPORTS, etc.—Wild animals such as elephants, black bear, boar, deer, donkeys, mungoose, cheetahs (leopards)—beasts of prey—buffalo, elk, crocodiles, civet cat, eagles, etc. The Veddahs, and my intercourse with them went out hunting wild game in remote parts of the island.

(K) EXPORTS.—The principal products exported.

(L) Quote from pages 66, 67, and 82 of my "Handbook to the Ceylon Courts of the Chicago Exhibition," the information in which was supplied by Mr. John Ferguson, proprietor and editor of the *Ceylon Observer*, and also in his highly useful and important work, "The Tropical Agriculturist," which is kept up-to-date. Quote statistics of the revenue and trade of the island (imports and exports) and the areas in cultivation of various products. In 1837 the total value of trade was only £900,000, against £9,000,000 now. Miles of road, 3,700; railways, 271 and 211 miles projected and sanctioned; canals, 170 miles. The details of imports will show how largely Manchester meets the requirements of Ceylon in cotton goods and fabrics of various sorts, the value of such goods being upwards of £600,000.

(M) The botany of the island, which is rich in palms, such as cocoanuts, Palmyra-trees, the beautiful talipot palm, tree ferns, and, in fact, every variety of fern; also bread-fruits and mango-trees, and hosts of others which are evergreen. The country, to my mind, and taken as a whole, is not excelled. Forty years of my life spent there, etc., etc. Beauty of the island, good government, equal laws under British rule, and a happy and contented people. A colony which England may well be proud of. What would this country be without its colonies and India, and such grand outlets for its surplus population and energy?

Sir John illustrated his address with maps, lantern views, and a large collection of the natural products of the island.

Mr. HENRY LEE proposed a very hearty vote of thanks to Sir J. J. Grinlinton, and to the Lord Mayor for permission to use his parlour. Mr. HARRY NUTTALL seconded the resolution, which was passed.

Sir John responded, and invited the members to examine the produce samples. A large number of members availed themselves of the invitation, and kept Sir John busy for some time with questions.

In the evening, a dinner was given by some members of the Council and members of the Society at the Queen's Hotel, which was thoroughly enjoyed and was very instructive.

Sir John spent a few days in viewing our city, and works in Salford, and was much pleased.

He presented the samples to the Society's Museum.

#### LETTER FROM SIR JOHN J. GRINLINTON.

The Queen's Hotel, Manchester,

Friday night, 7th October.

Eli Sowerbutts, Esq., F.R.G.S.,

Secretary, Manchester Geographical Society,

Dear Sir,—In reference to your letter of to-day, I have pleasure in leaving in one of your cases at the Queen's Hotel the following articles of Ceylon produce for your Society, viz., the whole of the samples of the produce

of the cocoanut-tree, namely:—Cocoanut oil, copra, panac (cake), cocoanut husk, coir yam, coir thistle fibre, coir mattress fibre, coir rope, dessicated cocoanut; also the samples of essential oils, such as citronalla oil, lemon-grass oil, cinnamon oil, cinnamon-leaf oil, and six samples of Ceylon tea. These latter were not brought back with the other samples to the hotel, but you are welcome to them.

I thank you very much for your courtesy and attention to me during my visit, and I hope you will convey my very cordial thanks to Mr. Wilde for his unremitting attention and kindness.—I am, dear sir,

Yours faithfully,

JOHN J. GRINLINTON.

P.S.—I have indeed been cordially received everywhere, and I feel that I am indebted to the Geographical Society and to yourself for the great kindness shown me.—J. J. G.

### CORRESPONDENCE.

MAJOR-GENERAL SIR F. DE WINTON.

York House, St. James's Palace, S.W.,

5th October, 1898.

Dear Sir,—I am desired by H.R.H. the Duke of York to acknowledge the receipt of your letter of the 30th ult., and to request you to thank the Council for the very kind expressions of sympathy, which the letter conveyed, to himself and the Duchess of York, on the sad bereavement they have recently sustained through the death of the Queen of Denmark.

Believe me to remain,

Yours very faithfully,

F. DE WINTON.

CHEVALIER FROEHLICH.

Italian Consulate,

30, Faulkner St., Manchester,

October 6th, 1898.

Dear Mr. Secretary,—I beg to present our Society with a splendid work in ten volumes (published at 30 francs each), and entitled: "Nouvelle Géographie Universelle, la terre et les hommes," with a large number of maps and views, par Elisée Reclus, which I trust may be considered worthy of acceptance.—I am, dear sir, your obedient servant,

ROBERT FROEHLICH.

Eli Sowerbutts, Esq., F.R.G.S.,

Secretary, Manchester Geographical Society.

IMPERIAL INSTITUTE OF THE UNITED KINGDOM,  
THE COLONIES, AND INDIA.

(CANADIAN SECTION.)

Imperial Institute Road,

London, S.W.,

20th Sept., 1898.

The following is a list of Canadian minerals for Manchester:—(1) Asbestos, Danville, Quebec. (2) Apalite (phosphate of lime), Buckingham,



Quebec. (3) Mica (amber), Perkin's Falls, Quebec. (4) Galena (silver lead), West Kootenay, British Columbia. (5) Auriferous anast, Fraser River, British Columbia. (6) Copper nickel, Sudbury, Ontario. (7) Iron pyrites, Thunder Bay, Ontario. (8) Silver ore, Fort William, Lake Superior, Ontario. (9) Copper, Boundary Creek, British Columbia. (10) Iron, gold, silver, Fontenoy, Boundary Creek, British Columbia. (11) Specular iron ore, Frontenac County, Ontario. (12) Iron ore, Lake Superior, Ontario.

\* These samples are added to the Commercial Museum.

W. M. HAFFKINE, Esq.

Byculla Club, Bombay,

24th September, 1898.

The Secretary, Manchester Geographical Society,

Dear Sir,—Kindly transmit to Mr. H. M. Birdwood, and accept for yourself, my best thanks for the April to June issue of the Society's Journal, containing Mr. Birdwood's able lecture on "The Recent Epidemic of Plague in Bombay."—Yours faithfully,

W. M. HAFFKINE.

The 486th Meeting of the Society was held in the Library, on Wednesday, October 12th, 1898, at 7-30 p.m. In the chair, the Rev. S. A. STEINTHAL.

Letters were read from Miss. L. Hamilton, Mr. J. Bowes, Brig.-Gen. A. W. Greely, Mr. C. B. Tillinghurst, Mr. Thos. Ruston, Hon. J. V. Brower, and Mr. F. J. Payton.

Mr. C. H. BELLAMY, F.R.G.S., F.I. Inst., Member of the Council of the Society, addressed the Society on his recent travels in Northern Spain. Mr. Bellamy illustrated his address with a number of photographs specially prepared for the paper. As Mr. Bellamy was in Spain soon after the declaration of war with America, he had some interesting experiences to relate.

Alderman I. BOWES moved a very hearty vote of thanks to Mr. Bellamy for his interesting address. Mr. T. DREYDEL seconded the motion, which was carried.

Mr. BELLAMY responded, and placed at the disposal of those present a photograph of the King and Queen Regent of Spain.

The 487th Meeting of the Society was held in the Library, on Tuesday, October 18th, 1898, at 7-30 p.m. In the chair, Mr. J. HOWARD REED.

Several presentations were announced.

Letters were read from the following:—Mr. H. Handcock, Mr. S. P. Langley, Mr. E. Milner, Mr. W. F. Browne, Mr. J. Nasmith, Mrs. A. Little, Rev. F. B. Shawe, Mr. H. Birdwood, Rev. S. A. Steintal, Mr. G. C. Haworth, Sir J. J. Grinlinton, Mrs. A. B. Little, Mr. H. Cariss, and Mr. Percy Douglas.

Minutes of Meeting held on October 12th were read and approved.

The SECRETARY addressed the Society on "A Fortnight in Belgium," and reported on the proceedings of the International Navigation Congress lately held in Brussels.

The address was illustrated with books, pictures, photographs, samples of textile fabrics, etc., and by a series of lantern views. Questions were asked and replied to, and a very hearty vote of thanks was accorded to the Secretary for his address. The SECRETARY responded.

---

The 488th Meeting of the Society was held in the Library, on Monday, October 24th, 1898, at 7-30 p.m. In the chair Mr. J. D. WILDE, M.A.

Letters were read from Mr. A. J. Herbertson, Mr. C. H. Bellamy, and Mr. Thomas Law, and announcements of future meetings made.

The illness of the Chairman was referred to, and much sympathy was expressed. The Minutes of the previous Meeting were read and approved.

Mr. S. WELLS, F.R.G.S., Hon. Sec. of the Chamber of Commerce, Goole, addressed the Society on "A Recent Visit to Sardinia." Mr. Wells referred to Sardinia as a forgotten isle; the land of Nuraghi and brigands; Cagliari, its saints, relics, monks, and monasteries; barbarians and convicts; funeral rites; the Street of Tombs; some dead and living cities; catacombs, caves, and tomb-dwellings; wooing and "waking"; our first brigand; heathen temples and Roman theatres; sardonic smiles; through the island and across the mountains; curious and quaint costumes; salt lakes; volcanic hills; and other matters, and he illustrated his address with a large number of lantern views taken by him during his visit.

Mr. SAMUEL WELLS pointed out that at the time when the lands washed by the Mediterranean composed the whole world known to the ancients, the nations waged almost incessant war for possession of Sardinia. Pagans, Greeks, Romans, Carthaginians, and Saracens have alike possessed it, whilst the Italian Republics have divided it amongst themselves more than once. It had always been armed to the water's edge, and although the people had always united to repulse the common enemy, as soon as its coast was clear they invariably fell to fighting amongst themselves. Under these circumstances few lands possessed such a curious mixture of rusticity and savagery, superstition and ignorance, and they thoroughly showed in their ways of life how the simple heathendom still lay untouched, save for the successive light varnishes of religion and superstition. Mr. Wells proceeded to speak of his journey into the various quarters of the island, describing the peculiar customs of the people.

Mr. S. OFFENHEIM moved, and Mr. Alderman Bowes seconded, a very hearty vote of thanks to Mr. Wells for his very interesting address. The vote was carried, and Mr. WELLS responded.

---

The 489th Meeting of the Society was held in the Coal Exchange, on Thursday, November 3rd, at 7-30 p.m. In the chair, Mr. HARRY NUTTALL, Vice-Chairman of the Council.

Letters were read from the following:—Mr. F. J. Payton, Mr. Michael Ray, Mr. S. Wells, Sir J. J. Grinlinton, Mr. H. Handcock, Mr. J. Dilworth Harrison, Mr. Thomas J. Gilmour, Mr. D. A. Little, Mr. H. Handcock, Mr. R. Dehn, Mr. C. Battersby, Mr. Wm. E. Hoyle, Mr. C. H. Bellamy, Mr. H. Nuttall, Dr. Sinclair, Mr. Michael Ray, Mr. S. H. Brooks, Mr. H. Nuttall, Mr. A. Dean, Mr. H. Handcock, and Mr. S. Oppenheim.

Mr. LIONEL DECLE addressed the Society on "South Africa." Mr. Decle, who lately made a tour from Cape Town across the Zambesi, through Lakes Nyasa and Tanganyika to Lake Victoria, and on to Myoro, and who returned by way of Mombasa, a length of journey of about 7,000 miles, illustrating his address with lantern views from his own photographs.

Mr. DENTITH moved a vote of thanks to Mr. Decle for his admirable address, to Mr. Michael Ray for three lectures given by him to affiliated societies this week at Golborne, Leigh, and Eccles, and to the South African Association for their kindness in providing two such lecturers. Mr. C. H. STOTT seconded the vote of thanks, which was carried *nem. con.*

Mr. DECLE responded.

The 490th Meeting of the Society was held in the Library, on Wednesday, November 7th, 1898, at 7-30 p.m. In the chair, Mr. HARRY NUTTALL, Vice-Chairman of the Council.

Letters were read from the following:—Mr. C. H. Bellamy, Mr. S. H. Brooks, Mrs. U. M. Bright, Mr. F. Curzon, Monsieur Beucher, Mr. C. H. Bellamy, Mr. T. Collins, Mr. L. C. Evans, Mr. J. Thompson, and Rev. S. A. Steinthal.

Minutes of Meetings held on October 24th and November 4th were read and approved.

The election of the following new members was announced:—Mr. F. Armstrong, E. W. Cowan, J. Whitelegg, J. P. Rodier, R. E. Brierley, J. J. Doyle, J. Chorlton, B. J. Farmer, and Miss Elwell.

The following presentations were announced:—Portion of a Roman amphora and brick from Castlefield.

Mr. J. HOWARD REED addressed the Society on "The Nile," especially with reference to the Fashoda and Bahr el Ghazal question, illustrating his address with a set of lantern views specially prepared.

The SECRETARY called attention to the chapter in Mr. Hertslet's "Map of Africa," by treaty, and to Dr. Scott Keltie's "Partition of Africa," bearing on the subject of the address.

Professor CORE moved, and Dr. BLACK (Edinburgh) seconded, a very hearty vote of thanks to Mr. Reed, which was carried unanimously.

The 491st Meeting of the Society was held in the Library, on Wednesday, November 16th, 1898, at 7-30 p.m. In the chair, Mr. HARRY NUTTALL.

The Minutes of the previous Meeting (Nov. 7th) were read and approved.

The election of the following members was announced:—

LIFE: Mr. Alec Doxey.

ORDINARY: Mr. Harold Noar.

AFFILIATED SOCIETY: Prestwich Co-operative Industrial Society.



The following presentations were announced:—Roman Potsherds from Deansgate and Castlefield, by Mr. Roeder. "Geographical Delineations," Vol. I., 1806, by J. Aitkin, M.D. "View of the Russian Empire during the Reign of Catherine II.," by W. Tooke, F.R.S.; Vols. I. and II., 1801, by Mr. George Thomas.

Water-colour drawings presented by Mr. C. Roeder, British Guiana:—Quartaka, October 19th; Pasico, Water Hole; Cunuku Range, looking east from Napps; Cunuku from Parabaruyai; Cownamihu, Upper Demerara River, March 14th, 1869; Demerara River from Malalli Falls; Maccrapan from the N.-E.; Maccrapan House, Manari; Mappi Mountain, Cunuku Range; Saumai Mountain; Twasinki Mountain, September 16th; Esseguibo River, British Guiana; Paiwori Bayra, Esseguibo River, Sept. 16th; Esseguibo River, the Hill, Hamai, where there was in 1849 a school; Esseguibo River, Sept. 11th; Arissara Mountain, Oct. 4th, 1869, one of four panorama; Paccarima Mountain; Karwundio, Oct. 7th; Upper Rupununi; At the foot of Camaka Rapids, Arualamir Island; Esseguibo River, mouth of Potara River, and Mountain; Cayuni Gold Mine from the Captain House; Paxies; Villagers of Annai; Algriasi Gindes.

Correspondence was read from Mr. Percy Douglas, Mr. John Ainsworth, Sir J. J. Grinlinton, Miss Crompton, Mr. C. P. Scott, M. P., Mr. S. Oppenheim, Yorkshire Naturalists' Union, Mr. H. Caress, Royal Societies' Club, Mr. F. Starkey, Mr. J. M. Howard, Mr. Michael Ray, Chevalier R. Froehlich, Mr. C. Mazzelbach, Mrs. S. Steinthal, Miss M. A. Harrison, Mr. C. Battersby, Rev. Dr. R. Swallow, Mr. H. Caress, Mr. F. Hartley, Mrs. T. M. Howard, and Mr. S. Oppenheim.

The next Meeting was announced.

Mr. A. Y. SCHOLFIELD addressed the Society on "Switzerland," and he illustrated the address with a number of specially prepared lantern slides.

Mr. PEARSON moved, Mr. C. H. BELLAMY seconded, and the Rev. Dr. SOLOMON supported, a very hearty vote of thanks to Mr. Scholfield for his very interesting and eloquent lecture.

Mr. SCHOLFIELD responded.

The 492nd Meeting of the Society was held in the Library, on November 23rd, 1898, at 7-30 p.m. In the chair, Mr. J. HOWARD REED.

Minutes of previous Meeting were read and approved.

The election of Mr. John R. Hughes as an ordinary member was announced.

Letters were read from Mr. F. Buchmann, Dr. R. E. Husband, Messrs. Newton, Chambers, and Co., Miss F. M. Oram, Mr. T. K. Gordon, Alderman J. Greenwood, Messrs. H. Husband and Son, Rev. W. Vivian, and Mrs. E. Douglas.

The gift of lantern slides from Mr. Gordon, of Nottingham, was announced.

The Art Museum Festival was commended to the attention of the members.

The Meetings for December were announced.

Mr. C. H. BELLAMY, F.R.G.S., a member of the Council and a Victorian,

addressed the Society on "The Architecture of our English Cathedrals," illustrating his address with a fine set of lantern views.

A very hearty vote of thanks was tendered to Mr. Bellamy on the motion of Mr. G. MASON, seconded by Mr. SHARP.

Mr. BELLAMY responded.

The 493rd Meeting of the Society was held in the Library, on Friday, December 2nd, 1898, at 7-30 p.m. In the chair, the SECRETARY.

Minutes of last Meeting were read and approved.

The election of Mr. James G. Malcolm as an ordinary member was announced.

Presentations of "King Solomon's Golden Ophir," by Dr. Carl Peters, the author, and other books were announced.

Correspondence was read from Sir J. J. Grinlinton, Mr. John Angell, Mr. C. T. J. Garner, Mr. John Heywood, Mr. James S. Reed, Mr. C. P. Scott, Miss Crompton, Mr. J. A. Douglas, Mr. F. W. Hembry, Mr. S. H. Brooks, Mr. C. W. Sutton, Mr. J. Ross, Mr. C. H. Bellamy, Chevalier R. Froehlich, Mr. John Heywood, Rev. S. A. Steinthal, Liverpool Geographical Society, Miss A. White, Sir C. R. Markham, and Rev. W. Vivian.

Mr. WILLIAM HARPER, a Victorian, addressed the Society on "The Land of Burns," illustrating his address with fine lantern slides of the persons and places mentioned in the address.

Questions were asked and replied to.

Mr. CALVERT moved, and Mr. HINDLE seconded, a resolution: "That our hearty thanks are due and are hereby tendered to Mr. Harper for his interesting address." Mr. HARPER responded.

#### LETTER FROM DR. CARL PETERS.

Dr. Carl Peters' Estates and Exploration Co., Ltd.,  
Moorgate Station Chambers, London, E.C.,  
6th December, 1898.

Secretary, Royal Geographical Society, Manchester,

Dear Sir,—Permit me to present to the Geographical Society of Manchester a copy of a little study of mine just published.

I shall never forget the pleasant hours I spent in your Society in 1892, and always appreciate the honorary membership you kindly bestowed upon me.

I am about to start for South Africa, and if you allow me I shall be pleased to communicate with you on any scientific discovery I may be able to make.—With kindest regards,

Yours most faithfully,

CARL PETERS.

The 494th Meeting of the Society was held in the Library, on Wednesday, December 7th, 1898, at 7-30 p.m. In the chair, Mr. HARRY NUTTALL, Vice-Chairman of Council.

The Minutes of previous Meeting were read and approved.

Various presentations, including three Vasco da Gama handkerchiefs from Mr. N. Kolp, were announced.

Letters were read from the following:—Mr. J. A. Douglas, Mr. A. Greenwood, Mr. M. Ray, Chevalier R. Froehlich, Mr. R. A. Galle, Mr. C. H. Bellamy, Southampton Geographical Society, Mr. J. V. Morton, and Mrs. L. Oram.

The SECRETARY reported the proceedings of the British Association, referring to various addresses of interest and to the proceedings of the delegate meetings, and requested the members to take part in the work of the special committees.

The report was accepted.

The SECRETARY then gave an address on "Bristol and the surrounding districts, extending from the Avon Mouth to Salisbury."

The natural evolution of the city of Bristol was shown by maps and slides of places of interest in the city and surrounding district.

A large collection of evanescent papers, of maps, guides, photographs, and sets of Bristol papers covering the period of the British Association Meeting, and a set of the *Daily Chronicle* containing the De Rougemont story, were laid on the table.

Mr. LEWIS moved, and Mr. HINDLE seconded, a vote of thanks, which was carried, and responded to by the SECRETARY.

The 495th Meeting of the Society was held in the Library, on Wednesday, December 14th, 1898, at 7-30 p.m. In the chair, Mr. JOHN SNADDON.

The Minutes of the last Meeting were read and confirmed.

The election of Mr. R. H. Aspden as an ordinary member was announced.

Presentations:—Institut Colonial International Bruxelles: "Compte Rendu de la Session tenue à Berlin, les 6 et 7 Septembre, 1898." 1e serie: "La Main d'œuvre aux Colonies. Documents Officiels," Tome II.; ditto, Tome III. 2e serie: "Les Fonctionnaires Coloniaux. Documents Officiels," Tome I.; ditto, Tome II. 3me serie: "Régime Foncier aux Colonies. Documents Officiels; Précédés de Notices Historiques," Tome II. 4me serie: "Le Régime des Protectorats," Tome I.

Correspondence was read from Mr. D. A. Little, Mr. T. K. Gordon, Mr. F. J. Payton, Mr. F. Scott, Mr. Henry Kirkpatrick, Mr. W. Seymour, Dr. A. J. Herbertson, Rev. A. Crombie, Mr. J. A. Douglas, Mr. R. H. Knowlson, Dr. R. W. Feelkin, and Mr. W. Sherratt, and including a communication from Mr. E. Whymper "On a new Mountain Aneroid Barometer."

An Ortelius Atlas published by Plantin, of Antwerp, in 1854, the maps engraved on copper and coloured by hand, was exhibited to the members by the kindness of Mr. C. Schwabe.

Mr. J. HOWARD REED addressed the Society on "Cuba, considered Geographically, Historically, and Commercially," illustrating his address with a large number of slides specially prepared.

Mr. Alderman BOWES proposed a very hearty vote of thanks to Mr. Reed for his admirable and instructive address. Mr. ROBERTSHAW seconded the motion, which was carried. Mr. J. HOWARD REED responded.



## A NEW MOUNTAIN ANEROID BAROMETER.

(Reprinted from the *Times*, Dec. 17th, 1898. Corrected.)

29, Ludgate Hill, London,

December 9th, 1898.

SIR,—Mr. Murray published in 1891 a pamphlet ["How to use the Aneroid Barometer," 8vo., pp. 61, John Murray, Albemarle St., London], which gave some of the results that had been obtained from numerous comparisons of the aneroid against the mercurial barometer, made by me between the years 1879 and 1890. The earlier of these comparisons were made out of doors up to a height exceeding 20,000 feet; and the later ones were made in the workshop down to a pressure of 14 inches, which is about what one may expect to experience at the height of 20,770 feet above the sea.

These comparisons, or experiments, brought out certain facts. It was found that all aneroids which were tested, upon being submitted to diminution in atmospheric pressure, lost upon the mercurial barometer. It was found, if an aneroid was placed under the receiver of an air-pump (having a mercurial barometer attached, in such a way that one could cause simultaneous reduction in pressure for both barometers), that, although the aneroid might for a moment read truly against the mercurial, when pressure was reduced, say to 20 inches, it would in a very short time read *lower* than it. It was found that this loss augmented constantly, and that in a single day, under a constant pressure of 20 inches, it might grow to half an inch and even more; and that the loss always continued to augment for several weeks, sometimes so long as seven or eight weeks. The lower the pressure, and the greater the length of time the diminution in pressure was experienced, the greater was the loss in any individual aneroid.

It was found also that aneroids commenced to recover this loss immediately pressure was restored; no matter whether it was restored entirely and suddenly, or gradually and partially as it is when a traveller is coming down hill; and that in course of time after return to the level of the sea (or if kept artificially at a pressure of 30 inches or thereabouts) an aneroid might recover all its previous loss, even although it might have experienced very low pressures, and been kept at such pressures for months at a time. Hence, in consequence of the *loss*, travellers or surveyors may be led to very much exaggerate their altitudes (unless they carry some standard for comparison which will enable them to determine the errors of their aneroids on the spot); and in consequence of the *recovery* they may be led to believe, on return to the level of the sea, that their aneroids have been working well and truly, although they may have, as a matter of fact, been doing quite the reverse.

The publication of these results led to improvements in the manufacture of the aneroid, and *some* instruments of the best class which have been constructed in late years show a distinct advance in accuracy; but it is clear, from references which have been made quite recently by travellers to

their aneroids, that there are *others* which are still a long way from perfection. Mr. E. A. Fitzgerald, for example, says in the *Geographical Journal*, Nov., 1897: "Our aneroids played us some very curious tricks. One of them, on being taken to the height of 19,000 feet, registered 12 inches"—that is to say, it indicated an altitude of about 25,000 feet, and was about 30 per cent in error. This is several degrees worse than the behaviour of the instrument which was employed by Mr. J. Thomson during his journey in Morocco in 1888, though even *his* aneroid is said to have made his life a burden to him. One can well believe it did all that was imputed to it; for after Mr. Thomson's return, when it was tested under the air-pump at a pressure corresponding to a little lower than the height of Mont Blanc, upon being kept a week at that pressure, it acquired an error of  $-1.267$  inches, the value of which amount, at the altitude in question, exceeds 2,000 feet.

Manufacturers have endeavoured to tackle the difficulty in one way, and inventors have approached it in another. The former have attempted to abolish the fundamental cause of error, and the latter see that aneroids can be rendered of greater service in the measurement of altitudes by shortening the length of time that they need be exposed to the influence of the atmosphere. The most recent experimental aneroid which has been constructed with this view is the invention of Col. H. Watkin, C.B., Chief Inspector of Position-Finding in the War Department.

In introducing it, Col. Watkin said in effect, though not in these words: "You point out that all aneroids lose upon the mercurial barometer when submitted to a diminution of pressure; that this loss is large when pressure is much diminished; and that the loss continued to augment for several weeks. It is, you say, apparent that the *extent* of the loss which will occur in any aneroid upon the mercurial barometer on being submitted to a diminution in pressure depends—(1) Upon the duration of time it may be submitted to diminished pressure, and (2) upon the amount of the diminution in pressure; and that it follows that the errors which will be manifested by any particular aneroid will be greatest when it is submitted to very low pressures for long periods. Accepting this as a correct statement of facts, I propose to construct an aneroid barometer that can be put in action when required, and 'put out of gear' or 'thrown out of action' when it is not wanted for use; and I propose to construct it in such a way that it shall not be exposed to the influence of variations in atmospheric pressure when it is *out* of action; in short, that no variations in atmospheric pressure, however large they may be, shall produce any effect upon it except at the time when it is put in action for the purpose of taking a reading." The following description, supplied by Col. Watkin, explains the manner in which this is done:—

"In order to relieve the strain on the mechanism of the aneroid, and only permit of its being put into action when a reading is required, the lower portion of the vacuum-box instead of being a fixture (as is the case with ordinary instruments) is allowed to rise. Without entering into details of construction, this is effected generally by attaching to the lower portion of the vacuum-box a screw arrangement, actuated by a fly nut on the outside of the case. Under ordinary conditions this screw is released, and the vacuum-box put out of strain. When a reading is required, the fly nut is screwed up as far as it will go, thus bringing the instrument into the normal condition in which it was graduated."

At first mention this idea did not appear promising, as it seemed that, however quickly an observation might be made, the aneroid would be losing upon the mercurial all the time that the reading was being taken; that when the aneroid should be thrown out of action, this loss would be shut up; and that when readings should be taken on succeeding occasions the loss which would occur during them would accumulate; and that this would go on until at length the error would become almost or quite as serious as in an ordinary aneroid. I was, however, very urgently required to give the instrument a fair trial in the field; and after satisfying myself that, when thrown out of action, it was not affected by variations in atmospheric pressure (amongst other ways, by keeping it for six weeks under a receiver in which pressure was maintained constantly at 17 inches), I commenced to compare it against the mercurial barometer in Switzerland in last September, having intentionally refrained from taking a reading for six weeks further, after it was released from the air-pump, in order to obtain confirmation of the opinion that it was, when thrown out of action, actually impervious to the influence of variations in atmospheric pressure.

I commenced these comparisons at Zermatt on the 3rd of September [the height of Zermatt, according to the Swiss Federal Survey, is 5,315 feet], and between the 3rd and the 8th took 21 readings—that is to say, the aneroid was put in action and was thrown out of action 21 times in the above-mentioned period. I was interested to observe whether the accumulation of loss would take place. It did occur, but the total amount was small. The aneroid had a plus error of 0.122 of an inch the first time it was used, and this was reduced to +0.069 of an inch at the last reading. Thus, there was, on an average, a loss of 0.00252 (or  $\frac{2.52}{100000}$ ) of an inch on each occasion that a reading was taken.

On September 9th I carried the barometers to the top of the Gornergrat, but diverged from the way up to the summit of a minor peak called Gugel [S. F. Survey, 8,882 feet]. The error of the aneroid at Zermatt at the last reading was +0.069 of an inch, and on the top of Gugel it was +0.057, or  $\frac{5.7}{10000}$  of an inch. The difference of level between the stations, it will be seen, was 3,567 feet.

From the top of Gugel I came down for lunch to the hotel called the Riffelhaus [S. F. Survey, 8,429 feet], and there the error of the aneroid was +0.041 of an inch.

From the Riffelhaus I went to the top of the Gornergrat [S. F. Survey, 10,289 feet], and at 4-20 p.m. the error of the aneroid appeared to be -0.052 of an inch. The readings were:—

Merc. Bar. inches.	Temp. in shade.	Correction for temp. inch.	Merc. Bar. red. to 32° F. inches.	Aneroid. inches.	Error of Aneroid. inch.
20.923	55.5	-0.051	20.872	20.820	-0.052

I was not satisfied with this comparison. The sun's rays had been piercingly hot during the ascent, and the mercurial barometer had been unavoidably exposed to them. When set up in the shade, its sensitive, attached thermometer speedily took up the temperature of the air. It fell to 55.5° F., and would not fall lower. But the mercury in the barometer continued to fall long afterwards, because it was not cooled down to the temperature of the air. It is not improbable that the temperature of the mercury in the barometer was as high as 75° F. at the time it was read.



Assuming that this was the case, the following would be the correct comparison:—

Merc. Bar. inches.	Temp. of Mercury	Correction for temp. inch.	Merc. Bar. red. to 32° F. inches.	Aneroid. inches.	Error of Aneroid. inch.
20·923	75°	—0·087	20·836	20·820	—0·016

On my return to Zermatt after a descent of 4,974 feet, I was curious to observe what alteration there would be in the error of the aneroid. At the last reading prior to starting it had been +0·069 of an inch, and at the first one taken after the return it was precisely the same! More astonishing than this, the mean of eight readings taken on the four following days (Sept. 10th to 13th) came out +0·068 of an inch.

On September 13th I went again to the Gornergrat, and between 12—3 read the barometer three times. The following figures show the means of the three readings:—

Merc. Bar. inches.	Temp. in shade.	Correction for temp. inch.	Merc. Bar. red. to 32° F. inches.	Aneroid. inches.	Error of Aneroid. inch.
20·780	56° F.	—0·052	20·729	20·717	—0·012

This supported the opinion that the reading on September 9th was taken too soon, and that the temperature indicated by the attached thermometer was lower than the temperature of the mercury in the barometer. The mean of two comparisons at Zermatt after this second visit to the Gornergrat gave as the error of the aneroid +0·030 of an inch.

I then went down the Valley of Zermatt, and stopped successively for several days at each of the three villages, Randa, St. Nicholas, and Visp. At Randa [S. F. Survey, 4,741 feet], I made six comparisons on three days, and the mean error of the aneroid came out 0·000. At St. Nicholas [S. F. Survey, 3,678 feet], I took five readings on three days, and the mean error was —0·019 of an inch; and at Visp [S. F. Survey, 2,165 feet], I took three readings on two days, and the mean error was —0·006.

I then thought it would be well to submit the aneroid to a sharp and sudden diminution in pressure, and took the train back to Zermatt to see what would happen through a rise of 3,150 feet, made in 2 hrs. 20 min. At the last reading at Visp, the error was —0·002 of an inch, and at Zermatt I found it was +0·011. On return to Visp the mean error of five comparisons made on three days was +0·017 of an inch; at Sierre [S. F. Survey, 1,765 feet], five readings on four days showed a mean error of —0·010, and the mean error of the last two comparisons, made at Geneva [S. F. Survey, 1,227 feet], amounted to —0·030 of an inch. From September 9th to October 17th the aneroid was put in action 44 times, and its loss upon the mercurial in that time amounted to 0·099 of an inch. A plus error of 0·069 of an inch at Zermatt was changed into a minus one of 0·030 of an inch at Geneva. This was equivalent to a loss of 0·00225 (or  $\frac{225}{100000}$ ) of an inch on each occasion that it was used.

The remarkable nature of these figures will be apparent to any one who has acquaintance with the barometer, and especially to those who have used aneroid barometers in the field. Upon two occasions, Col. Watkin's instrument read so truly against the mercurial that I was unable to detect any discrepancy between the two instruments. At Randa, the mean of six readings gave as a result *no* error. Stress need not be laid upon these happy

agreements. It is more to the purpose to draw attention to column G in the following table:—

A Place of Observation.	B Date. 1898.	C Altitude.	D Merc. Bar. reduced to 32° F.	E Watkin's Mountain Aneroid.	F Number of Obser- vations.	G Mean error of Aneroid.
		Feet.	Inches.	Inches.		Inch.
Zermatt .....	Sept. 3-8	5,315	25·006	25·096	21	+ 0·090
Top of Gugel .....	" 9	8,882	21·963	22·020	1	+ 0·057
Riffelhaus .....	" 9	8,429	22·319	22·360	1	+ 0·041
Top of Gornergrat...	" 9	10,289	20·872?	20·820	1	- 0·052?
Zermatt .....	" 10-13	5,315	24·912	24·980	8	+ 0·068
Top of Gornergrat...	" 13	10,289	20·729	20·717	3	- 0·012
Zermatt .....	" 13-14	5,315	24·917	24·947	2	+ 0·030
Randa .....	" 15-17	4,741	25·687	25·687	6	0·000
St. Nicholas .....	" 17-22	3,678	26·443	26·424	5	- 0·019
Visp .....	" 23-29	2,165	27·726	27·720	3	- 0·006
Zermatt .....	" 30	5,315	24·475	24·492	2	+ 0·017
Visp .....	Oct. 4-7	2,165	27·890	27·907	5	+ 0·017
Sierra .....	" 9-12	1,765	28·131	28·121	5	- 0·010
Geneva .....	" 13-17	1,227	28·332	28·302	2	- 0·030

If the eye is run down that column, and neglects the hundredths and thousandths of an inch, it will be seen that it reads 0·0 from first to last! Better results might have been attained, and I believe would have been attained, if the readings had been taken with greater rapidity. Attention must be paid to two points when employing this instrument. The first is to keep it constantly shut off from the influence of the atmosphere, except at the times when readings are to be taken; and the second is to take the readings as quickly as possible.

Finally, I feel confident that, in the hands of those who will give the requisite attention, extraordinary results may be obtained from Watkin's mountain aneroid in observations made for altitude, and in determining differences of level.

The comparisons were made against a mountain mercurial barometer, Fortin principle, which was graduated to read on the Vernier to  $\frac{1}{500}$  of an inch, and by estimation could be read to  $\frac{1}{1000}$ . Before starting in July, this barometer was compared against its maker's standard, and it was found to have no error. On return in October it was again examined and compared, and it was found that it had not taken in any air.

The aneroid which was observed was  $4\frac{1}{2}$  inches in diameter, and was divided to 0·05 of an inch. Its scale ranged from 31 to 17 inches, and it weighed when in its leather sling case  $2\frac{1}{2}$  lbs. It was made by Mr. J. J. Hicks, 8, Hatton Garden. Aneroids of this type will be called Watkin's mountain aneroids, as they are especially devised for mountain travellers, and for survey work amongst mountains.

I am, sir,

Your obedient servant,

EDWARD WHYMPER.

The 496th Meeting of the Society was held in the Library on Monday, December 19th, 1898, at 7-30 p.m. In the chair Mr. HARRY NUTTALL.

The meeting was held to consider the question of Commercial and Geographical Museums. The Secretary read a short paper upon the subject, and considerable discussion ensued.

The meeting was unanimous that the question was of great importance to geographical societies, and the hope was expressed that a conference of societies might do something practical in the matter.

Thanks to the Secretary closed a most interesting meeting.

---

The 497th Meeting of the Society was held in the Library on Tuesday, December 20th, 1898, at 7-30 p.m. In the chair Mr. HARRY NUTTALL, vice-chairman.

The Minutes of the previous Meeting were read and approved.

Letters were read from the Rev. F. B. Shawe, Mr. H. Woolley, Mr. Harry Sowler, Mr. Edward Whymper, Rev. C. Symonds, Mr. M. Stirrup, Messrs. Eyre and Spottiswoode, Miss A. Crompton, Mr. W. S. Bruce, and Mr. E. Schwann, M.P.

The election of Mr. J. G. Malcolm and Mr. R. H. Aspdin as ordinary members was announced.

Mr. Alderman J. GREENWOOD, J.P., addressed the Society on "Old Halls in Pendle Forest, North Lancashire; their history, their literary associations, and their value as an assistant to understand the local geography and history of the County Palatine."

The address was full of interesting topographical, historical, and archeological matter, and was listened to with very great interest. Mr. Greenwood illustrated his address with a large number of lantern views from photographs especially taken by him.

Monsignor GADD, V.G., moved a very hearty vote of thanks to Mr. Greenwood, and commented upon the exceedingly interesting nature of the address. Mr. ROEDER seconded the motion, which was carried.

Mr. GREENWOOD responded.

---

The 498th Meeting of the Society was held in the Library on Wednesday, December 28th, 1898, at 6 o'clock.

A large number of children attended this lecture by the Secretary. The subject of discourse was the Elephant, and the address was plentifully illustrated by pictures, lantern slides specially prepared, by the foot of a rogue Ceylon elephant (kindly lent by Mr. Henry Kirkpatrick), by pieces of ivory and carvings, and other things attractive to the children and illustrative of the subject.

The children gave very keen attention whilst the lecturer spoke of elephants and ivory in the old world; the peculiarities of the Asiatic and African specimens; the story of the wild elephant, his hunting and capture; the tame elephant as a warrior, as a worker, as an ornament; and the descriptions of the tricks of the elephant and his fine capacity as baby nurse was very much enjoyed.

This was one of the most successful children's lectures we have had.

Thanks were given to the lecturer.



## REPORT OF THE MANCHESTER GEOGRAPHICAL SOCIETY FOR THE YEAR 1898.

The work of the Society in the year past has been of great interest and value.

The correspondence of the Society with individuals at home and abroad and with other societies has largely increased.

### EDUCATION.

The educational work of the year has been made valuable by the examination of the question of Commercial Education by Dr. A. J. Herbertson at the request of the Council, and his report when ready will be highly useful.

The examiners in Geography have examined and awarded prizes for answers to questions in Geography, and have held an examination for the Yorkshire Union of Institutes.

### MEETINGS.

The Meetings of the Society have been during the year numerous and interesting. Several addresses given to the Society were full of matter, and one or two of them will be particularly useful.

We may refer to the addresses on "Plague in Bombay," "Eastern China," "Cuba," "The Yellowstone," "Canada and the United States," and "South Africa" (Messrs. M. Ray and L. Decle), were all most valuable.

Some of the meetings held to examine the journals and papers received from corresponding societies, and those held for the expert study of recent maps, were of very much interest, and very much enlarged the knowledge of those who were present. It is to be noticed that this year we have had a large number of addresses from our own members, and they were a demonstration of the very large amount of knowledge and great ability in imparting that knowledge possessed by the members of the Society.

The Meetings of the Society were held every week from the beginning of January until June and from the beginning of October until December, and were very well attended. The Library is often inconveniently crowded; on one or two occasions all could not be accommodated, and some members were turned away.

The following list of the principal papers read will give some idea of the year's work, but it must be remembered that besides these papers there were read, at many meetings, short communications, correspondence, and short notes, which are often of an interesting and of an instructive kind.

### BRITISH ISLES.

"Holland in England," Mr. E. W. Mellor, J.P., F.R.G.S. "Cycling Tour in Scotland," Mr. J. S. Reid. "The Peel Park Museum, Salford," Mr. B. Mullen, M.A. "Boggart Hole Clough, Lewis Recreation Ground, and Queen's Park Museum," the Secretary. "The Middleton Parish Church, Rectory, etc.," Mr. Dean. "The History and Architecture of English Cathedrals," Mr. C. H. Bellamy, F.R.G.S. "The Land of Burns," Mr. W. Harper. "Bristol and Neighbourhood," Mr. Sowerbutts. "Old Halls in Pendle Forest," Mr. Alderman Greenwood, J.P.

## EUROPE.

"Northern Spain," Mr. C. H. Bellamy, F.R.G.S. "Belgium," Mr. Sowerbutts, F.R.G.S. "The Island of Sardinia and the Sards," Mr. S. Wells, F.R.G.S. "Tours in Switzerland," Mr. A. Y. Scholfield.

## ASIA.

"Western Tibet," Rev. F. B. Shawe, M.R.A.S. "The Upper Waters of the Rivers Irawaddy and Mekong," Right Hon. Sir R. Temple, Bart., G.C.S.I., C.I.E. "Eastern China," Consul T. L. Bullock, of Chefoo. "The Plague in Bombay," Mr. H. M. Birdwood, C.S.I., LL.D., M.A. "The Taj," Mr. Joel Wainwright, J.P. "The Island of Ceylon," Sir John Grinlinton, A.I.C.E., F.R.G.S.

## AFRICA.

"The Niger Territories and the Western Soudan," Mr. Sowerbutts, F.R.G.S. "Voyage of Vasco da Gama to India by the Cape of Good Hope," the Chairman and Secretary. "South Africa," Mr. Lionel Decle. "British South Africa," Mr. Michael Ray. "The Geography and History of the Fashoda Question," Mr. J. Howard Reed.

## AMERICA.

"The Yellowstone Park," Dr. F. H. Worswick. "From England to Chili," Capt. D. E. Hume, F.R.G.S. "The Mound Builders in British Columbia." "Canada, and the United States," Dr. W. J. Sinclair, M.D. "British Columbia and Klondyke," Rev. T. F. Nicholas. "British Columbia and the Yukon Gold Fields," Mr. W. Ogilvie. "The Geography and History of the Island of Cuba," Mr. J. Howard Reed.

## ANTARCTIC.

"History of Explorations in the Antarctic," Mr. J. Howard Reed and the Secretary. "The Belgian Antarctic Expedition," the Secretary. "The Proposed British Antarctic Expedition," Mr. J. Howard Reed.

## GENERAL.

Children's party and distribution of prizes. "The Musical Theory of the Ancient Greeks," Mr. R. C. Phillips. "The Unification of Time at Sea," Mr. W. N. Greenwood, F.R.Met.Soc. "The Andrée Balloon." "The Jackson-Harmsworth Arctic Expedition." "The Publications of Corresponding Societies." "The Geographical Distribution of Butterflies," Mr. Mark L. Sykes, F.R.M.S. Ladies' Reception by Lady Leech, Mrs. Steinthal, Mrs. Nuttall, Mrs. Oppenheim, Mrs. Zimmern, Mrs. Wilde, and Mrs. J. H. Reed. Exhibition and description of the cinematograph, radiograph, and graphophone by Mr. Harold J. Bentley. "The Norwegian Fishery Expedition, Bergen," the Secretary. "The Moravian Settlement at Fairfield," Rev. S. Kershaw. "The Nicholls' Hospital," Mr. J. S. Reid. "Ludworth Moor and Robin Hood's Picking Pegs," Mr. Joel Wainwright, J.P. "Stoneyhurst College," F. Sidgreaves, S.J. "Greenfield, Lydgate, etc," Mr. T. Dentith. "The International Canal Conference," Brussels, the Secretary. "The Natural

History of the Elephant," a lecture to children, the Secretary. "Commercial and Geographical Museums and Commercial Education," the Secretary.

#### GEOGRAPHICAL AND COMMERCIAL MUSEUM.

Large additions have been made during the year to the native product collections of the Society, and the lecturers of the Society are now enabled to illustrate their addresses by collections from Canada, Cape of Good Hope, Australia and Ceylon.

The Society is much indebted to the Imperial Institute for a large addition to the collection, and to Sir J. Grinlinton for a collection of Ceylon products.

These collections have been valuable already, and will be more used as our affiliated societies are made aware of their value.

To these collections, always increasing, there will require to be attention to the inquiry department and to the distribution of intelligence. This is limited now for want of clerical work. The matter is largely to hand, but requires to be put into a better form for the use of members.

#### JOURNAL.

The Journal has been issued for the June quarter, and the rest of the Journal for the year is ready for the printer.

#### LIBRARY AND MAP ROOM.

The additions to the Library and Map Room during the year have been very large in number and of great interest and value.

The time is surely come when the splendid collection of the Society shall be placed in a condition of availability. To do this we require here also more clerical help, and we shall also want a considerable amount of binding to prevent destruction and loss. The shelf room is totally inadequate. We require now quite as much again as that we have, so that room may be had for classification, addition, and re-arrangement. If we had the clerical assistance demanded we might hope in a short time to have a fairly complete catalogue of the contents of the Library and Map Room.

#### LANTERN SLIDES.

The Photographic Department of the Society is most encouraging. Several hundred slides have been added during the year, and the Victorian work is much aided by the several thousand slides possessed by the Society. But here again there is much need of assistance.

#### EXCURSIONS.

The number of excursions of the Society has not been large, but they have been thoroughly enjoyed. The Bristol, Salisbury, Stoneyhurst, and Belgian visits were profitable, and, as in previous years, many members going abroad have made great use of the Society to their comfort and help.

The receptions of the members at Brussels and at Louvain call for special mention, and the great kindness of Professor Dufief and Professor Gilson cannot be forgotten. The assistance they gave the members was generously and graciously given, and was much appreciated.



Besides the list hereafter given of visits, a number of smaller visits were made by parties of three or four, and it was found that a large amount of information and pleasure was obtained.

The principal excursions in 1898 were to Peel Park; Boggart Hole Clough; Middleton; Bristol; Stonehenge, Salisbury, etc.; Belgium; and Stonehurst, from Accrington.

#### DEATHS.

One of the saddest things is the list of members who have died in the year. One of the original members, the Ven. Archdeacon Anson, who has so often received the Society at his charming garden at Birch. Other members, as Mr. J. B. Shaw, Alderman Husband, Mr. H. A. Southworth, Mr. S. Rains, Dr. Pankhurst, Mr. William Grimshaw, and others, who have been members for many years; and a new member like Sir George Grey, who showed his very great interest in the Society, a great British viceroy who had come to spend the evening of his days at home. These and many others have departed to our very great regret.

#### COMMERCIAL EXPEDITIONS.

In last year's report mention was made of the expedition from the Blackburn Chamber of Commerce to China. That expedition has completed its work, and has issued a most valuable report.

Lord Charles Beresford has also made a commercial visit to China, and has issued his report.

Mr. Worthington has made a visit to Uruguay, and has brought a collection of samples, and is issuing his report.

These expeditions must lead to others, perhaps of a more modest and quieter kind, and this is work the Society should be prepared to take part in.

#### VICTORIANS.

The Victorian work has been carried on vigorously, and many commendations have been sent of their lecturing work. Several brilliant lectures were given by Mr. Michael Ray, whose services and those of Mr. Lionel Decle were placed at the disposal of the Society by the South African Association.

The number of lectures given by the Victorians this year were restricted, owing to the illness of several lecturers.

The details of their work are given in a separate report, but it is due here to express great thankfulness to the members of that body for their disinterested and self-sacrificing labours on behalf of the Society.

#### FINANCE.

We are wanting a large accession to our membership; this is the sheet anchor of the Society. If we had members enough all difficulties would cease. If we are short of members the work must be made most difficult.

The balance-sheet has been again audited by the Hon. Auditors, Mr. W. Aldred and Mr. Thomas Gregory. There is a slight balance against the Society, which a few new members would have wiped out.

## GENERAL BALANCE SHEET, DECEMBER 31st, 1898.

LIABILITIES.		ASSETS.	
£	s. d.	£	s. d.
To Subscriptions paid in advance .....	23 2 0	By Arrears of Members' Subscriptions.....	25 14 6
„ Sundry Accounts outstanding .....	99 8 6	„ Account owing .....	21 7 6
		„ Cash in hand—	
		Bank.....	£35 9 0
		Secretary .....	8 16 11
			44 5 11
		„ Balance of Revenue Account * .....	31 2 7
	<u>£122 10 6</u>		<u>£122 10 6</u>

\* This balance has been met by Cheques from Mr. S. H. Brooks (£30),  
and Mr. Reuben Spencer (£1 1s.).

NOTE.—The Furniture, Fittings, Books, Maps, &c., in Library, Stock of *Journals*, and Lantern and Slides, are not taken into account as assets in the above statement. There are 31 Life Members, whose subscriptions have been taken as Revenue.

Audited and found correct,

THEODORE GREGORY, F.C.A., } Hon. Auditors.  
WILLIAM ALDRED, F.C.A. }

May 30th, 1899.

# REVENUE ACCOUNT.

Dr.

JANUARY 1st TO DECEMBER 31st, 1898.

Cr.

## EXPENDITURE.

	£	s.	d.	£	s.	d.
To Expenses of Meetings.....	153	0	0			
„ <i>Journal</i> , January, 1896, to June, 1897, less Advertisements and Sales.....	209	8	0			
„ Rent, Rates, Gas, Water, Insurance.....	105	6	4			
„ Salaries .....	110	10	0			
„ Books, Maps, Binding, &c., for Library.....	18	13	7			
„ Sundry Expenses, Stationery, Postages, Tele- grams, Cleaning, Wages, Coal, &c. ....	84	8	5			
„ Commission and Expenses on New Members and Collection of Subscriptions .....	14	12	6			
				99	0	11
„ Educational Committee Expenses.....				8	1	11
				£704	0	9

## INCOME.

	£	s.	d.	£	s.	d.
By Balance from 1896 .....				44	13	4
„ Members' Subscriptions for 1897—						
Life .....	20	10	0			
Ordinary .....	514	10	0			
Associate.....	69	6	0			
Societies .....	21	0	0			
				625	6	0
„ Bank Interest .....				2	18	10
„ Balance carried forward .....				31	2	7

£704 0 9



THE  
COUNCIL AND OFFICERS  
OF THE  
MANCHESTER GEOGRAPHICAL SOCIETY  
FOR 1899.

*President.*

His Royal Highness the DUKE OF YORK, K.G.

*Vice-Presidents.*

His Eminence CARDINAL VAUGHAN.  
His Grace the DUKE OF DEVONSHIRE, K.G.  
The Right Hon. the EARL OF DERBY, K.G.  
The Right Hon. EARL EGERTON OF TATTON.  
The Right Rev. the LORD BISHOP OF MANCHESTER.  
The Right Hon. the LORD MAYOR OF MANCHESTER.  
His Worship the MAYOR OF ACCRINGTON.  
His Worship the MAYOR OF BLACKBURN.  
His Worship the MAYOR OF OLDHAM.  
His Worship the MAYOR OF SALFORD.  
The VICE-CHANCELLOR of the VICTORIA UNIVERSITY.  
The PRINCIPAL OF OWENS COLLEGE.  
The Right Rev. MONSIGNOR GADD, V.G.  
The Right Hon. Sir JAMES FERGUSON, Bart, C.I.E., M.P.  
The Right Hon. A. J. BALFOUR, M.P.  
The Right Hon. JACOB BRIGHT.  
Sir W. H. HOULDSWORTH, Bart., M.P.  
Sir HUMPHREY F. DE TRAFFORD, Bart.  
Sir FRANK FORBES ADAM, C.I.E.  
Alderman SIR BOSDIN T. LEECH, J.P.

Alderman SIR JOSEPH LEIGH, J.P.  
Mr. B. ARMITAGE, J.P., Chomlea.  
Mr. GILBERT BEITH.  
Mr. FREDERIC BURTON.  
The Very Rev. L. C. CASARTELLI, M.A. Ph.D.  
Mr. F. CAWLEY, M.P.  
Professor W. BOYD DAWKINS, M.A., F.R.S.  
Professor T. H. CORE, M.A.  
Mr. E. F. G. HATCH, M.P.  
Mr. W. H. HOLLAND, M.P.  
Mr. HENRY LEE, J.P.  
Mr. WILLIAM MATHER, J.P.  
Mr. HARRY NUTTALL, *Vice-Chairman of the Council.*  
Mr. SAMUEL OGDEN, J.P.  
Mr. HERBERT PHILIPS, J.P.  
Mr. F. PLATT-HIGGINS, M.P.  
Mr. FRITZ REISS.  
Mr. C. E. SCHWANN, M.P.  
Mr. C. P. SCOTT, M.P.  
Rev. S. A. STEINTHAL, F.R.G.S., *Chairman of the Council.*  
Mr. T. R. WILKINSON.  
Mr. F. ZIMMERN.

*Trustees.*

Mr. Councillor S. H. BROOKS, F.I.Inst.      Mr. SIDNEY L. KEYMER, F.R.G.S.  
Mr. E. W. MELLOR, J.P., F.R.G.S., F.I.Inst.

*Honorary Treasurer.*

Mr. S. OPPENHEIM, J.P., (Vice-Consul for Austria-Hungary).

Mr. J. E. BALMER, F.R.G.S.  
Mr. C. H. BELLAMY, F.R.G.S.  
Mr. J. C. BLAKE, F.R.G.S., F.I.Inst.  
Mr. Alderman I. BOWES.  
Mr. G. T. BOWES.  
Mr. J. C. CHORLTON.  
Mr. H. T. CROOK, C.E.  
Mr. THOMAS DENTITH.  
Mr. Councillor T. HASSALL.  
Mr. J. E. KING, M.A. High Master, Manchester Grammar School.

Mr. N. KOLP.  
Lady LEECH.  
Mr. D. A. LITTLE.  
Mr. T. C. MIDDLETON, J.P.  
Mr. R. C. PHILLIPS.  
Mrs. PICKERING.  
Mr. W. J. SINCLAIR, M.D., J.P.  
Mr. GEO. THOMAS.  
Mr. J. THOMPSON.  
Mr. H. WOOLLEY, F.R.G.S.

*Honorary Secretaries.*

Mr. F. ZIMMERN.      Mr. J. D. WILDE, M.A.  
Mr. J. HOWARD REED.

*Honorary Auditors.*

Mr. WILLIAM ALDRED, F.C.A.      Mr. THEODORE GREGORY, F.C.A.

*Secretary and Editor.*

ELI SOWERBUTTS, F.R.G.S., F.I.Inst., 16, St. Mary's Parsonage, Manchester.

*Honorary Local Secretaries.*

South Manchester and Moss Side, Mr. J. HOWARD REED.  
Oldham, Mr. F. RIGG.  
Lytham, Mr. J. T. LIGHTWOOD.  
Stockport, Mr. T. H. RATHBONE.  
Heywood,

Leigh, Tyldesley, &c. Mr. J. WARD.  
Urmston and Flixton, Miss A. E. LAW.  
Leeds, Mrs. JESSIE E. SHRIEVE.  
Blackpool and Neighbourhood, Mr. J. RIGBY.  
Ashton and Stalybridge, Mr. C. T. I. GARNER.

\* \* \* The writers of papers are *alone* responsible for the opinions expressed by them.

Books, Maps, &c., for Notice or Review, may be sent to the Secretary, 16, St. Mary's Parsonage, Manchester.

# YORKSHIRE UNION OF INSTITUTES.

## GEOGRAPHY EXAMINATION, 1899.

*Held at the expense and by the Official Examiner of the Manchester Geographical Society.*

THE annual examination of the students connected with the Yorkshire Union of Mechanics' Institutes was held on March 25th. The subject was the "Geography of China," and with the announcement of the subject the following notice was issued:—"A map will certainly be required, and a well-drawn one will have many marks. Compasses and rulers may be used, and evidence of a knowledge of 'projection' will be rewarded."

Forty-eight candidates were entered, but only 19 presented themselves for examination. The eldest was 23 years of age, the youngest 13, the average age being a little under 16.

The following questions were set, the time allowed for answering being 2½ hours:—

The first question must be attempted by all candidates, the rest are optional.

The maximum number of marks to be awarded for each question is shown in brackets.

The Examiner will not recommend the first prize to be awarded to any candidate who obtains less than a total of 200 marks.

### THE CHINESE EMPIRE.

- 1.—Draw a map of China proper, showing the great rivers and mountains, the provinces and chief towns, and indicating by shading, colouring or otherwise, the localities distinguished by special products. Show also the names of the subject provinces or independent states which border upon China. (120)
- 2.—Name briefly the subject provinces which form the Chinese Empire—their chief towns, extent, population, and any one circumstance which may give interest to each. What is the extent and population of China itself? (20)
- 3.—Distinguish the three zones into which China may be divided. What climate, natural features, and special productions (animal, vegetable, or mineral) characterise each? (50)
- 4.—Give the names (with meaning) of any six of the provinces of China, and show by examples how these meanings recur again in names of towns or physical features. (30)
- 5.—What are the two most important imports and two most important exports of China, and what is their annual value? (20)
- 6.—What amount of shipping visits Chinese ports annually; to what nations does it belong, and in what proportion? (20)
- 7.—Compare the trade routes between London and Shanghai, New York and Shanghai, and St. Petersburg and Peking. What plans are there for shortening any of these? (45)
- 8.—Describe the course of the Yang-tse-Kiang, naming the provinces it flows through, the chief towns on its banks, its measurements, the difficulties which impede its navigation and the efforts made to overcome them. (35)

- 9.—“In no country is education regarded so highly as in China.” How far is this statement true, and what is the consequence? (15)
- 10.—Mention any circumstance or event connected with the following names: Tienstin, Yalu, Niuchwang, Kiaochau, Wei-hai-wei, Ta-lien-wan, Nankin, Fokien, Kowloon, Taku. (Full marks will not be given for this question unless the names are correctly placed on the map.) (30)
- 11.—Explain the expressions: “The Son of Heaven,” “The Sorrow of China,” “The Forbidden Land.”

As a result of the answers the candidates are arranged in the following order:—

1	Edward Hemingway	..	..	..	Bradford Mechanics' Institute
2	Thomas Simpson	..	..	..	..
3	George Whitley	..	..	..	..
4	Joseph Gould	..	..	..	..
5	{ Norman Morton	..	..	..	Salt Schools, Shipley
	{ Herbert Brodrick	..	..	..	..
7	Harold Hudson	..	..	..	..
8	{ Newman Robinson	..	..	..	..
	{ Thomas Summerskill	..	..	..	..
10	{ John W. Sadler	..	..	..	Bradford Mechanics' Institute
	{ Joseph Green	..	..	..	Salt Schools, Shipley
12	{ George A. Cook	..	..	..	Woodhouse Mechanics' Institute
	{ Frank Withyman	..	..	..	Salt Schools, Shipley
14	Arthur Brunton	..	..	..	..
15	Ernest C. Barnes	..	..	..	..
16	Joseph Maude	..	..	..	..
17	Fred Oddy	..	..	..	..
18	Walter Buttle	..	..	..	..
19	Ernest Mitton	..	..	..	..

The contest between the first and second was very close. Although only three candidates obtained over 200 marks, the papers on the whole show a little improvement on last year. The spelling is less original and more orthodox, and the answers generally have been more simple and direct. It cannot be too often impressed upon candidates that answers should be given to the questions asked, and not to others which are not asked. A question about the comparative advantages of the trade routes between London and Shanghai, and between St. Petersburg and Peking, is not answered by a description of the neglected and dilapidated condition of Chinese canals. The fact that maps are crossed by lines of latitude and longitude seems to be getting known, some candidates having made use of a mode of projection abandoned generally long before the present generation of geographers, and only evidencing a certain cramming and the memory. The one method suitable to an examination—combining speed, simplicity (only compass and ruler being needed) and thought—does not appear to have been taught. The papers are not entirely devoid of humour; the physical peculiarity and the national habits of Mongolia are well hit off by the candidate who described that province as the greatest “stable land” in the world; and possibly Oriental habits had been seen by that other candidate who took his ship from the Mediterranean to the Red Sea by the “Sewerz” Canal.

I cannot close this report without repeating that the room (provided by the Yorkshire Union of Institutes) in which the examination is held is utterly unsuitable for such a number of candidates, and I trust better provision will be made on the occasion of the next examination.

THE EXAMINER.



# REPORT OF THE EXAMINER ON THE REPLIES TO QUESTIONS IN GEOGRAPHY DURING THE YEAR 1898.

THE questions have been replied to by a fair number of children, but not by as many as we might expect. The replies have been very well done, and exhibit thought and care. Two or three of the papers were very good indeed, and indicated power of observation and of description. The first prize, an associate member's ticket of the society, is awarded to Master Bellamy, the second prize to Master Seymour Reed, and other prizes were also allotted. The examination upon all considerations was very satisfactory indeed.

THE EXAMINER.

## REPORT OF THE "VICTORIANS" FOR 1898-9.

THE "Victorians" of the Manchester Geographical Society have now completed their interesting and instructive work for the session. Owing to the increase of the number of affiliated societies, it will not be possible in future for the "Victorians" to give more than a limited number of lectures to other societies.

During the session just ended the aggregate audiences which have benefited by the interesting lectures of the "Victorians" number about 20,000.

The lecture descriptive of a journey from Manchester to the Scilly Islands, given by Captain S. H. Brooks, proved to be one of great interest, and will be long remembered by each of the several audiences to whom it was delivered as one of the most complete and satisfactory lectures of its kind possible.

It will be seen that the choice of lectures as given in the syllabus is very varied, and it is a matter for surprise that some of the lectures have not been asked for, such, for instance, as the one on "British Columbia," which includes an account of Dawson City and the gold discoveries in the region of the Yukon River.

The South African Association kindly sent two of their number, Mr. Michael Ray and Mr. Lionel Decle, who gave several lectures on "South Africa," which were very highly appreciated.

The work of the "Victorians" here given will show the various places visited and the range of subjects lectured upon:—

1898.

- Oct. 7.—Atherton, "China."
- „ 10.—Leigh, "Cuba."
- „ 11.—Heywood, "The Explorations of Nansen."
- „ 12.—Manchester, "Northern Spain."
- „ 13.—Pendleton, "The Nile and Fashoda."
- „ 17.—Ashton, "Cuba."
- „ 18.—Manchester, "Belgium."
- „ 19.—Eccles, "Naples."
- „ 19.—Winnington, "South Africa."
- „ 25.—Walkden, "The Nile and Fashoda."
- „ 28.—Urmston, "Switzerland."
- „ 31.—Golborne, "South Africa."
- Nov. 1.—Eagley, "The Nile and Fashoda."
- „ 1.—Leigh, "South Africa."
- „ 2.—Eccles, "Cuba."
- „ 3.—Manchester, "South Africa."
- „ 7.—Manchester, "The Nile and Fashoda."

1898.

- Nov. 16.—Winnington, "The Scilly Isles."  
 " 16.—Manchester, "Switzerland."  
 " 21.—Meltham, "The Nile and Fashoda."  
 " 23.—Manchester, "The English Cathedrals."  
 " 28.—Ashton, "The Land of Burns."  
 " 29.—Stalybridge, "Westward Ho!"  
 " 30.—Eccles, "A Fortnight in Belgium."  
 Dec. 2.—Manchester, "The Land of Burns."  
 " 3.—Oldham, "Belgium."  
 " 5.—Leigh, "Castile and Arragon."  
 " 5.—Altrincham, "The Rhine."  
 " 6.—Walkden, "Battlefields of Europe."  
 " 6.—Hollingworth, "The Rhine."  
 " 7.—Manchester, "Bristol and the British Association."  
 " 13.—Oldham, "The Story of Nansen."  
 " 14.—Winnington, "London to Australia."  
 " 14.—Manchester, "Cuba."  
 " 19.—Manchester, "Commercial Museums."

1899.

- Jan. 9.—Ancoats, "Belgium."  
 " 11.—Eccles, "India."  
 " 11.—Winnington, "Cuba."  
 " 16.—Patricroft, "Across Africa with Stanley."  
 " 21.—Oldham, "English Cathedrals."  
 " 23.—Ashton, "South Africa."  
 " 29.—Didsbury, "Battlefields of Europe."  
 " 30.—Meltham, "British East Africa."  
 Feb. 6.—Prestwich, "Switzerland."  
 " 8.—Walkden, "Manchester."  
 " 8.—Crompton, "Land of Burns."  
 " 8.—Golborne, "Battlefields of Europe."  
 " 9.—Churnet Street, "Cuba."  
 " 13.—Clayton-le-Moors, "India."  
 " 13.—Stockport, "The Rocky Mountains."  
 " 14.—Burnley, "The Nile and Fashoda."  
 " 15.—Winnington, "India."  
 " 20.—Manchester, "Map Changes in 1898."  
 " 23.—Mossley, "Venice."  
 " 24.—Audenshaw, "Land of Burns."  
 " 24.—Didsbury, "The Nile and Fashoda."  
 " 28.—Burnley, "Australia."  
 Mar. 2.—Winnington, "The Scilly Isles."  
 " 4.—Nicholls' Hospital, "A Fortnight in Belgium."  
 " 6.—Ashton, "Switzerland."  
 " 8.—Winnington, "The Highlands of Scotland."  
 " 12.—Heaton Chapel, "The North Pole."  
 " 15.—Prestwich, "A Fortnight in Belgium."  
 " 27.—South Manchester, "The Nile and Fashoda."

The "Victorians" have also been at work on the analysis of the numerous foreign and English journals received by the Society. The analysis for 1895 is now finished, but a large amount of arrears in this section has to be disposed of before it is quite up to date.

The photographic work has been actively carried on, and there have been added during the year more than 300 slides, which are now the property of the Society.

For the use of lecturers on our Colonies we have a collection of natural products—that is, the raw materials, arranged in boxes, agricultural, mineral, and artificial, which are of great value, and which have been reinforced from samples sent to the Society by the Imperial Institute. This collection is now becoming so important that it will require special attention in the future.

## LIST OF MAPS, BOOKS, JOURNALS, &amp;c.,

ACQUIRED BY THE SOCIETY FROM JANUARY 1st TO DECEMBER 31st, 1898.

## MAPS.

## GENERAL.

- Plan of the Annual Range of the Surface Temperature of the Ocean. Royal Geographical Society. \* The Society.
- Southern Pacific Company's Map of the World, showing the San Francisco Overland Route between China, Japan, and Europe. \* Mr. Rud. Falck.
- Carte de la Navigation à Vapeur dans le Bassin de la Méditerranée. Paris: J. Andriveau-Coujon, 1842. \* Mr. E. Sutton.
- Routes in the Spitzbergen-Novaya Zemlya Seas, 1895-1897. Royal Geographical Society. \* The Society.
- Central Spitzbergen. From sketch surveys made in 1896-7 by Sir Martin Conway. Royal Geographical Society. \* The Society.

## EUROPE.

- Map of the British Isles. London: John Wallis. Scale, 25 miles = 1 inch. 1811.†
- The Official Travelling Map of England and Wales, with part of Scotland, copied from the Government maps. Made by order of the Board of Ordnance by James Bingley. London: Thomas Tegg, 1831. Scale, 20 miles = 1 inch.†
- Ordnance Maps of England and Wales. Scale, one inch to the mile. Having MS. Geological colours and notes by the late Sir J. Prestwich. Presented by Lady Prestwich through Mr. H. S. Woodward, F.G.S. Sheets 2, N.E., S.E., N.W., S.W.; 3, N.E., S.E., N.W., S.W.; 4, N.E., N.W., S.W.; 5, N.E., S.E., N.W., S.W.; 6, N.E., S.E., N.W., S.W.; 8, N.E., S.E., N.W., S.W.; 10, N.E., S.E., N.W., S.W.; 12, N.E., S.E., N.W., S.W.; 13, N.W.; 14, N.E., S.E., N.W., S.W.; 16, S.W.; 17, N.E., S.E., N.W.; 18, N.E., S.E., N.W., S.W.; 19, N.E., S.E., N.W., S.W.; 36; 37, N.E., S.E., N.W., S.W.; 38, N.E., N.W.; 40, N.E., S.E., N.W., S.W.; 41; 42, N.E., S.E., N.W., S.W.; 58, S.E.; 59, N.E., S.E.; 74, N.E., S.E., N.W., S.W.; 75, S.E.; 79, N.E., S.E., N.W., S.W.
- Cycling Road-Map of Manchester District, from the new Ordnance Survey. London: G. W. Bacon and Co., Ltd.
- Large Scale Plan of Manchester, from the Ordnance Survey. London: G. W. Bacon and Co., Ltd.
- Touring Map. Environs of Manchester, from the Ordnance Survey, by J. Bartholomew, F.R.G.S. London: John Walker and Co., Ltd.
- Plan of Prestwich, Broughton, and Cheetham District. Published by Richard Collinson, auctioneer and valuer, estate and insurance agent. \* Mr. Geo. Thomas.

\* Donor.

† Presented by Mr. C. W. Sutton, with the kind permission of Mrs. Ware, from the late Mr. S. Hibbert Ware's collection.



Tourist Map of the English Lake District. \* Mr. Geo. Thomas.

View of the City of Dublin, from the *Illustrated London News*.†

Correct Map of France. As divided by the National Assembly into departments and districts. Scale, 40 miles = 1 inch.†

Carte Chorographique de la Généralité d'Auvergne. Paris: 1786.†

Nouvelle Carte de la Suisse, 1799.†

Chart showing the height of the Alps.†

Nouvelle Carte Roulière de L'Italie. Paris: Messrs. H. Langlois et Cie., 1827.†

Map of N. Italy.†

Pianta della Citta di Venezia.†

Map of Florence and surrounding country.†

Plan et vue Générale de la ville de Florence.†

Carte Topografica della parte piu interessante della Campagna di Roma. Misurata e Designata da Gio Enrico Westphal, 1827. (With guide by the same author.)†

Nuova Pianta di Roma Antica, by Cav. E. Visconti.†

Carta del Patrimonio di S. Pietro.†

Map of Naples and surrounding country.†

Plan de Pompéi, par le Chanoine André de Jorio. Naples: 1833.†

Carta del Dipartimento del Bachigilione.†

Carta della Sicilia, 1824.†

Geological Map of the Transcaspian Depression. Constructed by A. M. Konskin, mining engineer, 1890. London: Royal Geographical Society. \* The Society.

## ASIA.

Chart showing Changes of Coast at the entrance of Obi and Yenisei Rivers. Surveyed by the Vilkitsky expedition, 1894-6. In two sheets. Royal Geographical Society. \* The Society.

Sketch Map of Lob Nor and the Lower Sarim River, from a survey by S. K. Kozloff. Royal Geographical Society, 1898. \* The Society.

The Fadhli Country, South Arabia. From a sketch survey by the late J. Theodore Bent, Esq., 1897. Scale, 1/250,000, or 1 inch = 3.9 miles. Royal Geographical Society. \* The Society.

Maskat and Matrah in Oman, Arabia, to accompany the paper by Capt. A. W. Iliffe, late I.N. Scale, 1/30,000, or 1 inch = 0.47 miles. Royal Geographical Society. \* The Society.

Sketch Map of Persia, Afghanistan and Beluchistan, to illustrate journeys of Capt. P. M. Sykes. Scale, 1/8,000,000, or 1 inch = 126 miles. Royal Geographical Society. \* The Society.

War Map of Afghanistan, showing the Indian and Russian Frontiers, and adjoining countries. London: W. H. Smith and Son. \* Mr. Geo. Thomas.

Sketch Map of Central Asia, to illustrate Dr. Sven Hedin's journey, 1894-97. Scale, 1/10,000,000, or 1 inch = 160 miles. Royal Geographical Society. \* The Society.

Bartholomew's Special Map of the North-Western Frontier of India. Scale, 1/3,300,000, or 1 inch = 52 miles. Edinburgh: John Bartholomew and Co. \* The Publishers.

Sketch Map of Tirah and surrounding country, to illustrate the paper by Colonel Sir T. H. Holdich, K.C.I.E., C.B. Scale, 1/250,000, or 3.94 miles = 1 inch. London: Royal Geographical Society. \* The Society.

---

† Presented by Mr. C. W. Sutton, with the kind permission of Mrs. Ware, from the late Mr. S. Hibbert Ware's collection.

- A new accurate map of Bengal. Drawn from the best authorities. By Thos. Kitchin.†
- Central and Northern States of the Malay Peninsula, Siam. By H. Warrington Smyth. Scale, 1/2,000,000, or 1 inch = 31·56 miles. Royal Geographical Society. \* The Society.
- Sketch Map of China, showing the density of population, mineral resources, chief products, principal trade routes, existing and projected railways, and inland navigation. Scale, 150 miles = 1 inch. London: Royal Geographical Society. \* The Society.
- Sketch Map of Central China, showing the basin of the Yang-tse-Chiang, to illustrate the paper by Mr. W. R. Carles. London: Royal Geographical Society. \* The Society.
- Sketch Map of Tibet and Northern China, showing the journey of Captain Wellby and Lieutenant Malcolm from Leh to Peking. London: Royal Geographical Society. \* The Society.
- Sketch Map, illustrating a journey through the Khin-ban mountains from Pe-king to Isitsihar, by Dr. Donaldson Smith. Scale, 1/2,000,000, or 1 inch = 31·56 miles. Royal Geographical Society, 1897. \* The Society.

# AFRICA.

- Africa. Constructed and engraved by W. and A. K. Johnston. Scale, 1/5,640,000, or 89 miles to an inch. \* The Publishers.
- A Map of Parts of Charian, Tarhuna, and Mount Salata (Tripoli). By H. Swainson Cowper, F.S.A. 1895 and 1896. Scale, 1/200,000. London: Royal Geographical Society. \* The Society.
- Sketch Map of Southern Tunis, to illustrate Sir Harry Johnston's journeys. Royal Geographical Society. \* The Society.
- Sierra Leone. Compiled in the Intelligence Division, War Office, 1895. Scale, 1/506,880, or 1 inch = 8 miles. I.D., W.O., No. 1118. \* The Director.
- Map of the Nupe Country, with Plans of Bida and Ilorin, showing Route of the Expedition in 1897. Surveyed by Seymour Vandeleur, D.S.O. Scale, 1/1,000,000, or 15·8 miles = 1 inch. London: Royal Geographical Society. \* The Society.
- Carte de L'Etat Independant du Congo, dressée d'après itinéraires originaux des voyageurs. Par M. J. du Fief. Scale, 1/2,000,000. In four sheets. \* M. J. du Fief.
- Rovuma District of the Universities Mission, Central Africa. By Rev. W. C. Porter. \* Mr. G. H. Warren.
- A Portion of British Central Africa, West of the Loangwa River. From a sketch survey by Cyril D. Hoste, 1897. Scale, 1/1,000,000, or 15·78 miles = 1 inch. Royal Geographical Society. \* The Society.
- Lake Bangwelo and Surrounding Country, showing the Journey of Mr. Poulett Weatherley. Scale, 1/1,500,000, or 23·6 miles = 1 inch. London: Royal Geographical Society. \* The Society.
- Map showing the Eastern Half of Equatorial Africa, and the Explorations by Land and Water of Henry M. Stanley in the years 1874-77. London: Sampson Low, Marston, Searle, and Rivington. \* Mr. George Thomas.
- Lake Rudolf and Neighbouring Regions, from a survey by H. S. H. Cavendish, 1897. Scale, 1/2,000,000, or 1 inch = 31·56 miles. Royal Geographical Society. \* The Society.
- Sketch Map of Northern Somali Land. Compiled from the survey of Messrs. G. P. V. Alymer, F. B. Parkinson, and Lieut. Brander-Dunbar. Scale, 1/750,000, or 1 inch = 11·8 miles. Royal Geographical Society. \* The Society.
- Khartum and Omdurman, from a Map compiled by Colonel R. C. Slatin. 1898. \* The War Office.

† Presented by Mr. C. W. Sutton, with the kind permission of Mrs. Ware, from the late Mr. S. Hibbert Ware's collection.

Egyptian Sudan. The Nile from Metemma to Khartum. Compiled in Intelligence Division, War Office, July, 1893. Scale, 1/250,000, or 1 inch = 3·945 miles. I.D., W.O., No. 1251. \*The Director of Military Intelligence.

Panorama of the Soudan and the Nile. From the Mediterranean to Khartoum. London: G. W. Bacon and Co. \*Mr. George Thomas.

#### AMERICA.

Map of the United States and Territories, Canada East and West, Mexico, Central America, and the West Indies. \*Mr. George Thomas.

Comparative Synoptical Chart of Canadian History, 1492-1897. Scaife's System-Students' Edition. Scale, 20 years to the inch. Buffalo: Comparative Synoptical Chart Co. Ltd. 1897. \*Lady Leech.

Province of Ontario. Thunder Bay District (Lake Shebandowan Sheet). Compiled and drawn by Wm. McInnes from surveys made by the Geological Survey and Public Works Departments of Canada, the Crown Lands Department of Ontario, and the Canadian Pacific Railway. Scale, 1/253,440, or 4 miles = 1 inch. Edition printed for the Sixth Report of the Bureau of Mines, Ontario, 1896. \*The Imperial Institute.

Geological and Topographical Map of the Northern Part of the Lake of the Woods and Adjacent Country. Compiled and drawn by A. E. Barlow, B.A., 1895. Additions by W. J. Wilson, 1897. Scale 1/126,726, or 2 inches = 1 inch. Edition printed for the Sixth Report of the Bureau of Mines, Ontario, 1897. \*The Imperial Institute.

The North-western Part of the Dominion of Canada. Preliminary Edition. Scale, 50 miles to 1 inch. Ottawa, Canada: Surveyor-General's Office, January, 1898. \*Mr. W. Ogilvie.

The North-western Part of the Dominion of Canada. Reduced from a Map published by the Surveyor-General, Ottawa, 1898. Scale, 1/4,000,000, or 1 inch = 63·13 miles. Royal Geographical Society. \*The Society.

Map of the Western Part of the Dominion of Canada, showing Various Routes to the Yukon District, 1898. Compiled and drawn under the direction of W. T. Jennings, C.E. Scale, 50 miles to 1 inch. Toronto: Toronto Lithographing Co. \*The High Commissioner for Canada.

Map of the Province of British Columbia. Compiled by J. H. Brownlee, D.L.S. 1893.

Map of the Klondike Goldfields. Scale, 45 miles to 1 inch. Edinburgh and London: W. and A. K. Johnston. 1898. \*The Publishers.

The Pacific States and Territories, U.S.A., showing the prominent topographical features, location of principal cities and towns and points of note, and lines of the Southern Pacific Railway Co.'s Pacific system and its connections. 1898. \*Mr. Rud. Falck.

Map of Florida and the West Indies. Philadelphia: A. Finley. 1826. \*Mr. George Thomas.

A Section of North Mexico, showing the Journeys of J. Gurdon L. Stephenson, F.R.G.S., and A. Krauss, F.R.G.S., 1897. Scale, 1/1,250,000, or 1 inch = 19·7 miles. Royal Geographical Society. 1898. \*The Society.

North-east Nicaragua, from a survey by John M. Nicol, C.E., 1897. Scale, 1/500,000, or 1 inch = 23·7 miles. Royal Geographical Society. \*The Society.

War Map of United States with Spain. Second Edition. Edinburgh and London: W. and A. K. Johnston. 1898. \*The Publishers.

A Railway Map of the Argentine Republic, to illustrate "Argentine Geography and the Ancient Pampean Sea." By Col. George Earl Church. London: Royal Geographical Society. \*The Society.

Map to illustrate "Argentine Geography and the Ancient Pampean Sea." By Colonel George Earl Church. Scale, 1/20,000,000, or 315 miles = 1 inch. London: Royal Geographical Society. \*The Society.



Sketch Map to illustrate the Route of the Fitzgerald Expedition to Aconcagua, 1896-7. Scale, 2 miles = 1 inch. London: Royal Geographical Society. \*The Society.

Sketch Map of South-western Patagonia. From a survey by Otto Nordenskjöld. Scale, 1/600,000, or 1 inch = 9.47 miles. Royal Geographical Society. \*The Society.

#### OCEANIA.

Eastern Part of West Australia, illustrating the Route of the Exploration by the Hon. David W. Carnegie, 1896-7. Scale, 1/4,000,000, or 1 inch = 64 miles. Royal Geographical Society. 1898. \*The Society.

Map showing route of the Horn Scientific Exploring Expedition in the Northern Territory of South Australia. Originated and equipped by W. A. Horn, Esq.; commanded by C. Winnicke, F.R.G.S., 1894.

---

#### ATLASES, ALBUMS, &c.

Atlas Universel de Géographie, commencé par M. Vivien de St. Martin, et continué par F. Schrader. Paris: Librairie Hachette et Cie. (complete in 87 parts). No. 8, France Physique; No. 76, 76a, South America, Political and Physical. \*The Publishers.

Istituto Cartografico Italiano. Atlante Scolastico per la Geografia Fisica e Politica di Giuseppe Pennesi. Roma, 1898. \*Istituto Cartografico Italiano.

Historical Atlas of Modern Europe (see list of Exchanges). \*Clarendon Press, Oxford.

Missions-Atlas der Brudergemeine Sechzehn Karten mit Text. Herausgegeben von der Missionsdirektion der Evangelischen Bruder-Unität Herrnhut. Expedition der Missionsverwaltung, 1895.

The Tourist's Pocket Atlas of England and Wales, with descriptive gazetteer by J. G. Bartholomew, F.R.G.S. London: John Walker and Co., Ltd., 1893.

The Pocket Atlas and Guide to London. By J. G. Bartholomew, F.R.G.S. London. London: John Walker & Co., Ltd.

Vestiges of Old London. A series of etchings from original drawings, &c., with descriptions and historical notices by John W. Archer. London: David Bogue. \*Councillor S. H. Brooks, F.I.Inst.

H. Besley's Views of Devonshire. \*Mr. Geo. Thomas.

The Tourist's Souvenir of the neighbourhood of Bury. London: Rock Bros. and Pane. \*Mr. Geo. Thomas.

Views of Malton. Published by H. Smithson, Malton. \*Mr. Geo. Thomas.

Pocket Atlas of Scotland. By J. Bartholomew, F.R.G.S., with index and geographical notes. London: John Walker and Co. Ltd.

Pocket Atlas of Ireland. By J. Bartholomew, F.R.G.S., with index and geographical statistical notes. London: John Walker and Co. Ltd.

Collection of twelve views of Waterloo, and a plan of the battle, by Gerard, printer, at Waterloo. \*Mr. Geo. Thomas.

Minne från Norrköping. \*Mr. Geo. Thomas.

Annales du Musée du Congo, publiées par ordre du Secrétaire d'Etat. Serie I., Botanique. Illustrations de la Flore du Congo. Tome I. Fascicules 1 and 2. Bruxelles: Etat Indépendant du Congo, 1898. \*Etat Indépendant du Congo.

Annales du Musée du Congo, publiés par ordre du Secrétaire d'Etat. Serie II., Zoologie. Matériaux pour la Faune du Congo. Tome I. Fascicules 1 and 2. Bruxelles: Etat Indépendant du Congo, 1898. \*Etat Indépendant du Congo.

# BOOKS.

## GENERAL.

The Field of Geography. An address delivered by Sir Clements R. Markham, F.R.S., P.R.G.S., in the Hartley Hall, at the opening meeting of the Southampton Geographical Society, on November 16th, 1897. Published by the Southampton Geographical Society. \*The Society.

Ten volumes of "Nouvelle Géographie Universelle: La Terre et les Hommes," by Elisée Réclus. Paris: 1882; 8vo., profusely illustrated with maps and views. Published for subscribers only, at 30 francs a volume. \*The Chevalier R. Froelich.

Geographical Delineations; or a Compendious View of the Natural and Political State of all parts of the Globe. By J. Aitkin, M.D. In two volumes. Vol. I. London: J. Johnson, 1806. \*Mr. Geo. Thomas.

An Illustrated School Geography. By A. J. Herbertson, F.R.S.E., F.R.G.S., Partly based on Fry's "Complete Geography," and including most of its illustrations and photo-relief maps, supplemented by others. With 16 pages of coloured maps. London: Edward Arnold. \*The Publisher.

Bibliothek der Landerkunde. Band I. Der Antarctica, von Dr. Karl Fricker. Band II. Der Ostafrikanischen Inseln, von Professor Dr. E. Keller. Berlin: Schall und Grand, 1898. \*The Publishers.

Hints to Teachers and Students on the Choice of Geographical Books for Reference and Reading, with classified lists, by Robert Mill, D Sc., F.R.L.E. London: Longmans, Green and Co. \*The Publishers.

Richard Hakluyt, his Life and Work; with a short account of the aim and achievements of the Hakluyt Society. An address delivered by Sir Clements Markham, K.C.B., F.R.S., on the occasion of the fiftieth anniversary of the foundation of the society, December 15th, 1896.

Nordenskiöld's Voyage Round Asia and Europe. A popular account of the North-East passage of the "Vega," 1878-80, by A. Hongaard, lieutenant in the Royal Danish Navy, and member of the "Vega" expedition. Translated from the Danish by H. L. Braekstad. With three maps and 47 original illustrations. London: Sampson Low, Marston, Searle, and Rivington, 1882. \*Mr. Geo. Thomas.

Vegas Fåra Kring Asien och Europa. Jemte en historisk atarblick på föregående risor längs gamla världens narakust af A. E. Nordenskiöld. Stockholm: F. and G. Beyers, Förlag. Vols. I. and II. \*Mr. Geo. Thomas.

Fridtjof Nansen's "Farthest North," being the record of a voyage of exploration of the ship "Fram," 1893-96, and of a 15 months' sleigh journey by Dr. Nansen and Lieutenant Johansen, with an appendix by Otto Sverdrup, captain of the "Fram." About 120 full-page and numerous illustrations; 16 coloured plates in facsimile from Dr. Nansen's own sketches, etched portrait, photogravures, and maps. Vols. I. and II. Westminster: Archibald Constable and Co., 1897.

Annuaire du Club Alpin Français. Vol. 22., 1895:—Sous Terre. Marble Arch, Irlande, et Gaping Ghyll, Angleterre, Vol. 23, 1896:—Cueva del drach a Majorque, Scialets du Vercors, Chouruns du Devoluy. Par M. E. A. Martal. \*M. E. A. Martal.

Reisebilder aus dem Europäischen Rukland und dem Kaukasus. Von Edmund Henking. Leipzig: E. F. Steinacker, 1878. \*Mr. Geo. Thomas.

Presented by Mr. E. Sutton.

Foreign Office, 1897. Miscellaneous Series. Reports on subjects of general and commercial interest. Nos. 417-421, 423, 426-435, 437-439, 441-444, 446-450, 451, 452, 454-464, 466, 467.

Diplomatic and Consular Reports on Trade and Finance. Nos. 1755, 1841, 1846, 1853, 1889, 1890, 1904, 1907, 1923, 1924, 1926-1933, 1935, 1936-2000, 2003-2017, 2020-2022, 2024, 2026-2028, 2036, 2038-2042, 2045-2055, 2057, 2059, 2060, 2062, 2063, 2065, 2067-2073, 2075-2077, 2079, 2080, 2083-2090, 2092-2096, 2098-2106, 2108, 2110, 2111, 2114, 2118, 2122-2130, 2132, 2138.

- Scaife's Comparative and Synoptical System of History, applied to all countries. Student's edition. \* Lady Leech.
- Our Trade in the World in Relation to Foreign Competition. 1885 to 1895. By William T. H. Gastrell. London: Chapman and Hall. \* Councillor S. H. Brooks.
- Great Missionaries. By the Rev. C. C. Creegan, D.D., and J. A. B. Goodnow. With an introduction by the Rev. Francis E. Clark, D.D. London: Hodder and Stoughton.
- The Library of Useful Stories. Published by George Newnes Limited, London.
- I. The Story of the Stars, by G. F. Chambers; II. The Story of Primitive Man, by Edward Clodd; III. The Story of the Plants, by Grant Allen; IV. The Story of the Earth, by H. G. Seeley; V. The Story of the Solar System, by G. F. Chambers; VI. The Story of a Piece of Coal, by E. A. Martin; VII. The Story of Electricity, by John Munro; VIII. The Story of Extinct Civilisations of the East, by J. Anderson; IX. The Story of the Chemical Elements, by H. M. P. Muir, M.A.; X. The Story of Forest and Stream, by J. Rodway; XI. The Story of the Weather, by G. F. Chambers; XII. The Story of the Earth's Atmosphere, by D. Archibald; XIII. The Story of Germ Life, by H. W. Conn; XIV. The Story of the Potter, by G. F. Binns; XV. The Story of the British Coinage, by G. B. Rawlings; XVI. The Story of Life in the Seas, by S. Hickson; XVII. The Story of Photography, by Alfred T. Storey.

- 
- Shipmasters' Society, London. Fifth Session. Tides and Tidal Phenomena, considered in connection with Atmospheric Pressure, by W. N. Greenwood, master mariner, F.R. Met. Society. 1894.
- Problems of Nature: Researches and Discoveries of Gustav Jaeger, M.D. Selected from his published writings. Edited and translated by Henry G. Schlichter, D.Sc. London: Williams and Norgate.
- L'Extension du Système Décimal aux mesures du Temps et des Angles. Théorie Applications Scientifiques et Industrielles. Par J. de Rey-Pailhade, Ingénieur Civil des Mines. Paris: Gauthier-Villars et Fils; Toulouse: Gimet-Pisseau, 1897. \* Toulouse Geographical Society.
- Sur l'Extension du Système Décimal au Jour et au Cercle entiers avantages et procédés pratiques. Par M. J. de Rey-Pailhade. \* The Author.
- Sur la Quatrième Campagne Scientifique de la "Princesse-Alice." Par S. A. S. le Prince Albert 1er. de Monaco. \* The Author.
- Sur les Observatoires Meteorologiques de L'Océan Atlantique. Par S. A. S. le Prince Albert 1er. de Monaco. \* The Author.
- Notes on a collection of rocks and fossils from Franz Josef Land made by the Jackson-Harmsworth expedition during 1894-1896. By E. T. Newton, Esq., F.R.S., F.G.S., and J. J. H. Teall, Esq., M.A., F.R.S., V.P.G.S. \* Mr. A. Montefiore Brice, F.R.G.S.
- Natural selection in the Lepidoptera. By Mark L. Sykes, F.R.M.S. From the transactions and annual report of the Manchester Microscopical Society, 1897. \* The Author.

#### BRITISH ISLES.

- Bradshaw's Railway Time Tables and Assistant to Railway Travelling, with illustrative Maps and Plans. Manchester: G. Bradshaw. London: Shepherd and Sutton, and Wyld. 1839. (No. 3.) \* Mr. George Thomas.
- Report of the Departmental Committee appointed by the Board of Trade to Inquire into and Report upon the Dissemination of Commercial Information and the Collection and Exhibition of Patterns and Samples. London: Messrs. Eyre and Spottiswoode.
- United British Women's Emigration Association. Report, 1896. Winchester: Messrs. Warren and Son.



- Royal Societies' Club: Foundation and Objects; Rules and Bye-laws; List of Members.
- Sketch of the Tower of London as a Fortress, a Prison, and a Palace. Illustrated. By Mrs. A. Harman. London: J. Wheeler. \* Mr. George Thomas.
- A Guide to St. Paul's Cathedral, including a Copy of the Inscriptions on the Monuments, with numerous Wood Engravings. London: Hill. \* Mr. George Thomas.
- Our Egyptian Obelisk, Cleopatra's Needle. By Erasmus Wilson, F.R.S. London: Brain and Co. 1877. \* Mr. George Thomas.
- Proceedings of the British Association. Bristol, 1898.
- Bristol, its Associations and Surroundings—Historical, Literary, Scientific, Antiquarian, Social, and Commercial—in connection with the Visit of the British Association for the Advancement of Science, 1898. Descriptive text by John Latimer. Bristol: John Wright and Co.
- British Association, Bristol, 1898. Handbook to Bristol and the Neighbourhood, prepared by Various Authors for the Publications Sub-committee, and Edited by Bertram M. H. Rogers, B.A., M.D., B.Ch. Bristol: John Wright and Co.
- Visitor's Guide to Stratford-on-Avon. *Stratford-on-Avon Herald* Printing Works. \* Mr. Geo. Thomas.
- Sketches of the Remains of the Abbey Church and Conventual Buildings formerly belonging to Canons of the Order of Saint Augustine at Worksop and of the Church as restored, with a Concise Historical and Descriptive Account from its Foundation to the Present Time. By R. Nicholson. Worksop: S. Sissons. 1850. \* Councillor S. H. Brooks, F.I. Inst.
- Wardell's Guide to Kirkstall Abbey, Architectural and Descriptive. Edited and revised by W. M. Nelson, M.R.H.S., M.S.S., M.R.A.S. Belg., &c. Leeds: Samuel Moxon. \* Mr. George Thomas.
- Guide to Ilkley and its Vicinity. Manchester: Abel Heywood. \* Mr. George Thomas.
- Ward and Lock's Illustrated Guide to, and Popular History of, Scarborough, Filey, Whitby, Bridlington Quay, and their Vicinity. Compiled chiefly from "The Medical Guide to Scarborough," by C. B. Brearey, M.D., M.R.C.S., L.A.C. With Illustrations and new Route Map. London: Ward, Lock, and Co. \* Mr. George Thomas.
- Manchester Corporation Electric Works. Particulars of Generating and Distributing Plant at the Central Station, Dickinson Street, and various Sub-stations. Manchester: Messrs. Henry Blacklock and Co.
- A Short History of the Rise and Progress of the Manchester Royal Infirmary, from the year 1752 to 1877. By F. Renaud, M.D., F.S.A. Manchester: J. E. Cornish. 1898. \* Dr. W. G. Black, F.R.C.S.E. (Edinburgh).
- William Green, the Lake Artist, 1760-1823: a Biographical Sketch. By C. Roeder. \* The Author.
- The Forth Bridge. In its various stages of construction and compared with the most notable bridges of the world. By Philip Phillips. Second Edition. \* Mr. George Thomas.
- Macleod's Tourists' Guide through Edinburgh and Glasgow to the Lake District of Scotland. \* Mr. George Thomas.
- A Run round Ireland in 1897. Illustrated. \* Mr. George Thomas.

#### EUROPE.

- Handbook to the Cathedral Church of Thronhjelm. By W. Ramm. With a ground plan. 1887. \* Mr. George Thomas.
- Karta öfver Trollhättan med Vagvisare. Utgifven af Trollhättans Turistkommitte. \* Mr. George Thomas.
- A Brief Description of the Ancient Vessel found near Sandefjord in Norway, to accompany the Model of the Ship sent to the International Ship-Model Exhibition in London, 1882. \* Mr. George Thomas.

- Beskrivelse over Stavanger Kommunes Eundomme Almennyttige Indretninger, Legater MM. By H. Sange. With nine illustrations. \* Mr. George Thomas.
- The University Museum of Northern Antiquities in Christiania. A short guide for visitors. By Dr. Ingnald Undset. \* Mr. George Thomas.
- Grand Hotels, Christiania. udarbeidet af Olaf Thesen. Christiania: Udgiverens Forlag. \* Mr. George Thomas.
- Officiel Vägvisare öfver allmänna Konst-och Industritställningen Stockholm. 1897. \* Mr. George Thomas.
- Svenska Turistforeningens Årsskrift för år 1898. Stockholm: Wahlström and Widstrand.
- Guides of the Swedish Tourists' Club. No. 14: Stockholm. Stockholm: Wahlström and Widstrand. Leipzig: K. F. Koehler. \* Mr. George Thomas.
- View of the Russian Empire during the Reign of Catharine the Second and to the Close of the Eighteenth Century. By William Tooke, F.R.S. In three vols. Vols. I. and II. Dublin: G. Wogan. 1801. \* Mr. George Thomas.
- Diplomatic and Consular Reports. No. 446. Miscellaneous Series. Government Spirit Monopoly in Russia. Foreign Office, June, 1898. \* Mr. C. E. Schwann, M.P.
- Catalogue des Trésors de Mycenes au Musée d'Athènes. Par le Dr. Henri Schliemann. Leipzig: F. A. Brockhaus. 1882. \* Mr. George Thomas.
- Corinthé et Athènes. 1861. \* Mr. George Thomas.
- Bur Grinnerung an den Berliner Rothskeller. Berlin, 1881. \* Mr. George Thomas.
- Handbook for Travellers in Southern Germany. With map and plan. London: John Murray. \* Mr. George Thomas.
- Newest Guide through Prague. By John Frederick Schulz. With 12 photographic views, a map, and three plans of the theatres of Prague. Prague, 1869. Published by J. G. Calves.
- Bradshaw's Illustrated Handbook for Belgium and the Rhine and Portions of Rhenish Germany, including Elsass and Lothringen, with a Ten Days' Tour in Holland. With maps and illustrations. London: W. J. Adams. \* Mr. George Thomas.
- Kaisergruft bei den D.D. Kapuzinern in Wien. 1873. \* Mr. George Thomas.
- Führer durch Wien und dessen Umgebung. \* Mr. George Thomas.
- Arminius Vambéry, his Life and Adventures. Written by Himself. With portrait and illustrations. London: T. Fisher Unwin. 1884. \* Mr. George Thomas.
- Guida Manuale di Firenze e de'suoi contorni, con vedute, Pianta della citta, ed i cataloghi delle gallerie. Firenze: Francesco e Giuseppe Pindeider. 1889. \* Mr. George Thomas.
- A Guide to Thorvaldsen's Museum, Copenhagen. \* Mr. George Thomas.
- Catalogue of the late Sergeant-Major Cotton's Waterloo Library and Museum in the Museum Hotel at the Foot of the Lion Mount in the Centre of the Battlefield of Waterloo. Brussels: Cowie and Van de Weghe. \* Mr. George Thomas.
- La Suisse Circulaire Voyage dans la Suisse Française, la Savoie, l'Oberland, et la Suisse Centrale. \* Mr. George Thomas.
- The Castle of Chillon and Bonnivard. By J. Gaberel de Rossillon. \* Mr. George Thomas.
- Tit-Bits Guide to Paris and the Exhibition. \* Mr. George Thomas.
- Ablis Chateaudun Alencon, Colonne Mobile du Général de Lipowski (1870-1871). Paris: Chamuel, Editeur. \* Mr. George Thomas.
- La Cité de Carcassonne (Aude). Par Viollet de Luc. Paris: Ve. A. Morel et Cie., Editeurs. \* Mr. George Thomas.
- Nouveau Guide dans Orléans. Orléans: Ancienne Maison Alphonse Gatineau. Ch. Fortin, Libraire-Editeur. \* Mr. George Thomas.
- El Alcazar de Sevilla. Por Fernan Caballero. \* Mr. George Thomas.

# ASIA.

Guide to Ephesus. By J. T. Wood. 1885. \* Mr. George Thomas.

Travels in the Region of the Upper and Lower Amoor and the Russian Acquisitions on the Confines of India and China. By Thomas Witlem Atkinson, F.R.G.S., F.G.S. With a map and numerous illustrations. London: Hurst and Blackett. 1860. \* Mr. George Thomas.

Oriental and Western Siberia: a Narrative of Seven Years' Explorations and Adventures in Siberia, Mongolia, the Khirghis Steppes, Chinese Tartary, and Part of Central Asia. By Thomas Witlem Atkinson. With a map and numerous illustrations. London: Hurst and Blackett. 1858. \* Mr. George Thomas.

M. Robiski's Travels in Central Asia, 1893-1895. \* The Author.

I. The Future of Chitral and Neighbouring Countries. II. New Dangers and Fresh Wrongs. III. A Supplement, with a Map of the Pamirs. By G. W. Leitner. \* Councillor S. H. Brooks, F.I.Inst.

The Questions to be Considered by the Indian Currency Committee. By Major Leonard Darwin. London: Edward Stanford. \* The Author.

Batalhas da India. Como se Perdu Ormuz. Processo inedito do Seculo XVII. Por Luciano Cordeiro. Lisboa: Imprensa Nacional. 1896.

The Lusiad, or the Discovery of India: an Epic Poem. Translated from the Portuguese of Luis de Camoens, with an Historical Introduction and Notes by W. J. Mickle. Vols. I., II., III. \* Mr. George Thomas.

Books prepared for the Vasco da Gama Celebration, and presented by the Lisbon Geographical Society. Programme Général. Dos Feitos de D. Christovam da Gama. O Centenario no Estrangeiro. Textos em Aljama Portuguesa. A Viagem da India. Hymno do Centenario da India. Vida do Abba Daniel do Mosteiro de Luté. Dai-Nippon (o grande Japão). Chronica dos Reis de Bisnaga. Como se Perdu Ormuz. Vasco da Gama e a Vidigueira. No Oriente de Napoles á China. Vol. I., II. Religiones da Lusitania. Vol. I.

Straits Settlements. Papers relating to the Cocos-Keeling and Christmas Islands. \* Councillor S. H. Brooks, F.I.Inst.

China. Diplomatic and Consular Reports. Nos. 457, 466, 473, 475. \* C. E. Schwann, Esq., M.P.

Scenes from Open-air Life in Japan. Photographed by W. K. Burton. Plates by K. Ogawa. Text by J. Murdoch. Sights and Scenes on the Tókaidō. By K. Ogawa. Text by J. Murdoch, M.A. (These two beautiful books contained in a Japanese box, were presented by Councillor S. H. Brooks, F.I.Inst.)

# AFRICA.

The Map of Africa by Treaty. By Sir Edward Hertslet, K.C.B. Vol. I. Abyssinia to Great Britain (Colonies). Nos. 1 to 102. With amended maps. Vol. II. Great Britain and France to Zanzibar. Nos. 103 to 208. With amended maps. Vol. III. Appendix, Alphabetical Index, and Chronological List. With two maps. London: Eyre and Spottiswoode. Edinburgh: John Menzies and Co. Dublin: Hodges, Figgis, and Co. 1896. \* Councillor S. H. Brooks.

A Report of the Condition of the Empire of Morocco, addressed to the Right Hon. the Earl of Idlesleigh, G.C.M.G. By Donald Mackenzie. London: British and Foreign Anti-Slavery Society. \* Mr. George Thomas.

Travels through Central Africa to Timbuctoo, and across the Great Desert to Morocco, performed in the years 1824-1828. By René Caillié. Vols. I.-II. London: Henry Colburn and Richard Bentley. 1830. \* Mr. George Thomas.

The Gold Coast, Past and Present: a Short Description of the Country and its People. By George Macdonald. Illustrated. London: Longmans, Green, and Co. \* The Publishers.

Annual Report on the Niger Coast Protectorate for the year 1896-97. London: Messrs. Harrison and Sons. \* Mr. C. E. Schwann, M.P.



- Narrative of a Mission to Central Africa, performed in the years 1850-51, under the Orders and at the Expense of Her Majesty's Government. By the late James Richardson. In two volumes. Vols. I. and II. London: Chapman and Hall.
- Papers Relating to Recent Events in Uganda Protectorate. London: Messrs. Eyre and Spottiswoode.

AMERICA.

- Diary of My Trip to America and Havana. By John Mark. Manchester: J. E. Cornish. London: Simpkin, Marshall, and Co. \* Mr. George Thomas.
- The Voyages of the Cabots: Latest Phases of the Controversy. By Samuel Edward Dawson, Litt.D. From the Transactions of the Royal Society for Canada for 1897. \* The Author.
- Official Handbook of the Dominion of Canada. Parts I., II., III., IV. Published by the Government of Canada. 1898. \* The Imperial Institute.
- An Official Handbook of Information Relating to the Dominion of Canada. 1897. \* The High Commissioner for Canada.
- British Association for the Advancement of Science. Toronto Meeting, 1897. Handbook for Canada. 1897. \* Lady Leech.
- British Association for the Advancement of Science. Toronto Meeting, Daily Journal, August 18-25, 1897. \* Lady Leech.
- Sixth Report of the Bureau of Mines, 1896. Toronto: Warwick Brothers and Rutter. \* The Imperial Institute.
- Report of the Bureau of Mines. Vol. VII., Second Part. 1898. Toronto: Warwick Brothers and Rutter. \* Canadian Government Agent, Liverpool.
- Report of the Commissioner of Agriculture and Dairying for the Dominion of Canada. 1897. Ottawa: S. E. Dawson. \* The Imperial Institute.
- The Mines Act. Revised Statutes of Ontario, 1897, Cap. 36. Toronto: Warwick Brothers and Rutter. \* The Imperial Institute.
- Ontario. Premier Province of Canada. Description of the province, political institutions, natural resources, attractions for tourist, sportsman, and settler. Published by the Ontario Department of Agriculture, Toronto, Canada, 1897. \* The Imperial Institute.
- Quebec. Summer and Winter. 1896. \* Rev. T. F. Nicholas.
- Michipicoten Mining Division. Set apart by order in Council, September 9th, 1897. Regulations for mining divisions, approved by order in Council, September 15th, 1897. \* The Imperial Institute.
- Manitoba, as it is to-day. \* The Imperial Institute.
- British Columbia. Its Position, Advantages, Resources, and Climate. 1898. \* The Imperial Institute.
- British Columbia. Its Present Resources, and Future Possibilities. \* The Rev. T. F. Nicholas.
- Seventeenth Annual Report of the British Columbia Board of Trade. 1896. \* Rev. T. F. Nicholas.
- The Year Book of British Columbia, and Manual of Provincial Information, to which is added a chapter containing much special information respecting the Canadian Yukon, and Northern territory generally. By R. E. Josnell. \* The High Commissioner for Canada.
- Annual Report of the Minister of Mines for the year ending 31st December, 1896, being an account of mining operations for gold, coal, &c., in the province of British Columbia. Victoria, B.C.: R. Wolfenden. \* The Canadian Government agent, Liverpool.
- Vancouver Island as a Home for Settlers. \* Rev. T. F. Nicholas.
- The Klondike Official Guide. Prepared by Wm. Olgilvie. 1898. \* High Commissioner for Canada.

- Klondike *Up-to-Date*. Preliminary Circular. No. 2. \* Rev. T. F. Nicholas.
- United States Department of Agriculture, Weather Bureau. Bull. No. 19. Report on the Relative Humidity of Southern New England and other localities. By Alfred J. Henry. Washington Weather Bureau. 1896. \* The Chief.
- Philadelphia and its Environs. Philadelphia: J. B. Lippincott and Co. \* Mr. Geo. Thomas.
- Visitors Guide to the Centennial Exhibition and Philadelphia, 1876. Philadelphia: J. B. Lippincott and Co. \* Mr. Geo. Thomas.
- World's Fair. Jamaica at Chicago. An account descriptive of the colony of Jamaica, with historical and other appendices. Compiled under the direction of Lieut.-Col. the Hon. C. J. Ward, C.M.G., Honorary Commissioner for Jamaica. New York: W. J. Pell. 1893. \* The Imperial Institute.
- The North-Western Archaeological Survey. By Prof. T. H. Lewis. St. Paul (Minn.): Pioneer Press Co. 1898. \* The Author.
- Flagstaff at the Gateway to the Grand Cañon of the Colorado, and other scenic and pre-historic attractions. \* Rev. T. F. Nicholas.
- Vistas in Southern California. \* Rev. T. F. Nicholas.
- Hotel del Monte, Monterey, California. \* Rev. T. F. Nicholas.
- The Colony of British Honduras, its Resources and Prospects; with particular reference to its indigenous plants and economic productions. By D. Morris, M.A., F.L.S., F.G.S. London: Edward Stanford. 1883. \* The Imperial Institute.
- The Republic of Guatemala. By Gustavo Mederlein. Philadelphia: The Philadelphia Commercial Museum. 1898. \* Mr. E. Sutton.
- British Guiana. Joint Report by Prof. J. B. Harrison, F.G.S., etc., and H. J. Perkins, F.R.G.S., on the Geology of the North-Western District. \* Mr. E. Sutton.
- Los Querandies. Breve Contribucion al Estudio de la Ethnografia Argentina. Del Felix F. Outes. Buenos Aires: Imprenta de Martin Biedma é Hijo. \* The Author.
- The Argentino-Chilian Boundary Question. By F. P. Hansen. Liverpool: C. Tinling and Co. 1898.
- The Chilo-Argentine Boundary Question. An answer to F. P. Hansen, Esq., Argentine Consul at Liverpool. By José Onofre Bunster. 1898.

#### OCEANIA.

- The British North Borneo Company. Directors' Report and Balance Sheet.
- Australasian Association for the Advancement of Science, Sydney. 1887. Vol. I. \* Messrs. Kegan Paul, Trench and Co., Ltd.
- Narrative of James Murrell's ("Jemmy Morrill") Seventeen Years' Exile among the Wild Blacks of North Queensland, and his life and shipwreck, and terrible adventures among savage tribes, their manners, customs, languages, and substitutions; also Murrell's rescue and return to civilization. By Edmund Gregory. Printed by Edmund Gregory, Brisbane. \* The Author.
- Queensland. By J. P. Thomson, Hon. F.R.S.G.S., President of Royal Geographical Society of Australasia, Brisbane. With a map. \* The Author.
- The Work and Wealth of Queensland. Being a sketch of the progress and resources of the colony, and its daily life. Illustrated. Queensland: Messrs. Pole, Outridge and Co., Brisbane. 1897. \* The Imperial Institute.
- How We are Progressing; being items of information from recent Queensland newspapers. Interesting and valuable to intending emigrants and settlers. No. 6. May, 1898. Issued by Agent-General for Queensland. \* The Imperial Institute.
- Queensland, Past and Present. An epitome of its resources and development. 1897. By Thornhill Weedon. Second issue. Brisbane: Edmund Gregory.

- Geographic History of Queensland. By Archibald Meston. Brisbane : Edmund Gregory. \* The Imperial Institute.
- The Year Book of Queensland. 1898. With map. Compiled by the editor of The Year Book of Australia. \* The Imperial Institute.
- A Guide to Queensland. By the authority of the Agent-General for Queensland. \* The Imperial Institute.
- Acquisition of Land from the Queensland Government. "The Land Act, 1897." \* The Imperial Institute.
- English Farming in Australia. Homes and Homesteads on Darling Downs. The Garden of Queensland. Illustrated. Reprinted from *The Queenslander* of 20th November, 1897, with explanatory preface by C. T. Dicken, Esq., C.M.G., Acting Agent-General. \* The Imperial Institute.
- Queensland. Department of Agriculture, Brisbane. Bulletin No. 19. Wheat-growing in Queensland. By E. M. Shelton, M.Sc. Brisbane : James C. Beal. \* The Imperial Institute.
- Supplement to the *Queensland Government Gazette*, containing meteorological reports from June, 1897, to January, 1898; and rainfall tables, July to November, 1896. \* Mr. Clement L. Wragge, Government Meteorologist.
- Queensland. Annual Report of the Under Secretary for Mines to the Hon. R. Philip, M.L.A., Secretary for Mines for the year 1896. Brisbane : Edmund Gregory.
- The North Queensland Registrar's Mining History of Charters Towers, 1872. \* The Imperial Institute.
- Annual Report of the Department of Mines and Agriculture, New South Wales, for the year 1897. Sydney : W. A. Gullick.
- Pictorial Illustrations of New Zealand. By S. E. Brees, C.E. London : John Williams and Co. \* Councillor S. H. Brooks, F.I.Inst.
- The *Evening Star*. Otago Jubilee edition. \* The Publishers.

---

## LIST OF CORRESPONDING SOCIETIES, &c. (EXCHANGES.)

### BRITISH.

- Belfast. Natural History and Philosophical Society. Report and Proceedings for the Session 1897-98.
- Birmingham. Philosophical Society. (Nothing received).
- Burnley. Literary and Scientific Club. (Nothing received).
- Cardiff. Naturalists' Society. Report and Transactions. Vol. XXX.
- Croydon. Microscopical and Natural History Club. Proceedings and Transactions for 1897.
- Edinburgh. Royal Scottish Geographical Society. Magazine. Vol. XIV., Nos. 1-12, and Index.
- Glasgow. Philosophical Society. Proceedings. Vol. XXIX.
- Glasson Dock, Lancaster. Greenwood's Nautical Almanac, General and Kludnometric Time Tables, &c., for the British Isles and adjoining Coasts, 1899.
- Hertford. Hertfordshire Natural History Society and Field Club. Transactions. Vol. IX., Parts 7, 8, 9.
- Leeds. Yorkshire Geological and Polytechnic Society. Proceedings. Vol. XIII., Part 3.



414 *The Journal of the Manchester Geographical Society.*

- Leeds. Yorkshire Naturalists' Union. (No Transactions received).
- Leeds. Yorkshire Union of Institutes and Village Library. Report of the 60th Annual Meeting, 1898.
- Leicester. Literary and Philosophical Society. Transactions, 1898. Vol. IV., Parts 11, 12; V. 1, 2.
- Liverpool. Geographical Society. Transactions, and Sixth Annual Report, 1897.
- Liverpool. Geological Society. Proceedings. Vol. VIII., Part 2.
- London. Anti-Slavery Reporter. Vol. XVIII. No. 4.
- London. British Association for the Advancement of Science. Report of the 67th Meeting, held in Toronto in September, 1897.
- London. The Colliery Guardian, 1898. Nos. 1932-1983.
- London. East India Association Journal, 1898. Vol. XXX. Nos. 13, 14, 15.
- London. Emigrants' Information Office. Combined circulars for Canada, Australasia, and South Africa. 1898. Quarterly.
- London. Royal Colonial Institute. Report of Proceedings, 1897-8. Vol. XXIX.
- London. Royal Geographical Society. The Geographical Journal. Vol. XI. Nos. 1-6; XII., 1-6. Year Book and Record, 1898. Charter and Bye-Laws. Antarctic Exploration; a Plea for a National Expedition. By Sir Clements R. Markham, K.C.B., &c.
- London. Imperial Institute Journal. 1898, January to December.
- London. Royal Gardens, Kew. Bulletin of Miscellaneous Information, 1898. January to December, with Appendices I, II, and III. Additional Series, No. 2.
- London. Review of Reviews. 1898, January to December.
- London. Royal Society of Literature. Transactions. Vol. XIX., Parts 3, 4; XX., 1, 2, 3. Report and List of Fellows, 1898.
- London. Travel. Edited by Dr. H. S. Lunn, M.D. 1898, January to December.
- London. India Office. List of Maps, Plans, &c., of India and other parts of Asia. Appendices, Nos. XXV., XXVI., XXVII.
- London. War Office, Intelligence Division. Maps. (See list of Maps).
- London. War Office. Catalogue of Maps. Accessions. 1898, January to December.
- London. Catalogue of Maps in Books and Periodicals contained in the War Office Library. Accessions, 1897.
- London. War Office. Accessions to the War Office Library. 1898, January to December.
- London. War Office Library. Geographical Index of Accessions. 1898. January to December, and Annuals for 1897 and 1898.
- Manchester. Chamber of Commerce. Monthly Record. 1898, January to December, and Index.
- Manchester. Co-operative Wholesale Societies, Limited. Annual, 1898.
- Manchester. Geological Society. Transactions. Vol. XXV., Parts 12-21. Report on Recent International Geological Congress at St. Petersburg, with Sketch of the Geology of Finland. By Mr. Mark Stirrup, F.G.S.
- Manchester. Literary and Philosophical Society. Memoirs and Proceedings. Vol. XLII., Nos. 1-5.
- Manchester. Museum. Owens College. Report for the year 1897-98. Museum Handbooks:—Catalogue of the Hadfield Collection of Shells from the Loyalty Islands. The Nomenclature of the Seams of the Lancashire Lower Coal Measures.
- Manchester. Statistical Society. Transactions. 1897-8.
- Manchester. Textile Recorder. 1898. Vol. XV., Nos. 177-188.
- Newcastle-on-Tyne. Tyneside Geographical Society. Journal. Vol. IV., Nos. 2, 3.

- Newcastle-on-Tyne. North of England Institute of Mining and Mechanical Engineers. Transactions. Vol. XLVII., Parts 1-7; and Annual Report for 1897-8. An Account of the Strata of Northumberland and Durham, U-Z.
- Oxford. Clarendon Press. Historical Atlas of Modern Europe from the Decline of the Roman Empire. Parts XV. to XXI.
- Penzance. Royal Geological Society of Cornwall. Transactions. Vol. XII., Part 3. (The 84th Annual Report).
- Rochdale. Literary and Scientific Society. The 20th Annual Report for the year 1898.
- Salford. Museum, Libraries, and Parks Committee. 50th Annual Report, 1897-8. Popular Guide to the Fisheries Exhibition in the Royal Museum, Peel Park, Salford.
- Southampton. Geographical Society. Reprints from "Southampton Times" and "Hampshire Express" of Reports of Meetings.
- York. Yorkshire Philosophical Society. Annual Report, 1898.

## MISSIONARY.

- Edinburgh. Church of Scotland Home and Foreign Mission Record. 1898, January to December.
- Edinburgh. Free Church of Scotland Monthly. 1898, January to December.
- Freiburg-in-Brigau. Die Katholischen Missionen (illustrated). 1898, January to December.
- London. Baptist Missionary Society. Missionary Herald. 1898, January to December.
- London. British and Foreign Bible Society. 94th Report.  
"Monthly Reporter," 1898, January to December.  
"Gleanings," 1898, August, December.
- London. Church Missionary Society for Africa and the East. Report of Proceedings, 1897-8.
- London. Church Missionary Intelligencer. 1898, January to December.
- London. London Missionary Society. 103rd Report for the year ending March 31st, 1898.
- London. Illustrated Catholic Missions. 1898, January to December.
- London. The Society for the Propagation of the Gospel in Foreign Parts. Report for the year 1897.
- London. S.P.G. The Mission Field. 1898, January to December.
- London. Universities Mission to Central Africa. "Central Africa." 1898, January to December.
- London. Wesleyan Missionary Notices. 1898, January to December.
- London. Methodist Free Church. Missionary Echo. 1898, January to December. 42nd Report of the Home and Foreign Missions for the year ending April, 1898.
- Mangalore. Basel German Evangelical Mission in South Western India. Report for 1897.

## COLONIAL.

- Adelaide. Royal Geographical Society of Australasia. South Australian Branch. President's Annual Address.
- Brisbane. Royal Geographical Society of Australasia. Queensland Branch. Proceedings and Transactions. 13th Session, 1897-8.
- Brisbane. Meteorological Branch. Post and Telegraph Department, Queensland. Clement L. Wragge, Government Meteorologist. (See list of books.)

# 416 *The Journal of the Manchester Geographical Society.*

- Brisbane. Annual Report of British New Guinea from 1st July, 1897, to 31st June, 1898, with Appendices.
- Capetown. South African Philosophical Society. Transactions. Vol. X., Nos. 2, 3.
- Halifax, N.S. Nova Scotian Institute of Science. Proceedings and Transactions. Vol. IX. Part 3.
- Melbourne. Royal Geographical Society of Australasia, Victorian Branch. (Nothing received.)
- Quebec. Geographical Society. (Nothing received.)
- Sydney. Royal Geographical Society of Australasia, New South Wales Branch. Proceedings. Vol. V. Part 4.
- Sydney. Department of Mines and Agriculture, New South Wales. Geological Survey. Records, Vol. VI. Part 1. Memoirs, No. 6, Palaeontology. Mineral Resources. Nos. 1, 2, 4.
- Sydney. Department of Lands, New South Wales. Eighteenth Annual Report, being for the year 1897. (Presented by the Agent-General.)
- Toronto. Canadian Institute. Transactions. Vol. V. No. 10. Proceedings. Vol. I. Parts 4, 5, 6.
- Wellington. Department of Lands and Survey, New Zealand. Report, 1897-98.

## FOREIGN.

- Alger. Société de Géographie. Bulletin 1898, Nos. 1-4.
- Antwerp. Société Royale de Géographie d'Anvers. Bulletin. Vol. XXII. Nos. 1 to 4.
- Baltimore. Johns Hopkins University. Circulars. Nos. 135 to 138. Studies in Historical and Political Science. XVI. Series. Nos. 1 to 12.
- Berlin. Gesellschaft für Erdkunde Verhandlungen. Vol. XXV. Nos. 1 to 10.
- Berlin. Deutsche Kolonialzeitung. Organ der Deutschen Kolonialgesellschaft. 1898, Nos. 1 to 52, and Year Book for 1897.
- Berlin. Geographischen Gesellschaft. (Nothing received.)
- Bern. Geographischen Gesellschaft. Jahresbericht für 1897. Band XVI.
- Bordeaux. Société de Géographie Commerciale. Bulletin. 1898. Nos. 1 to 24.
- Boston, U.S.A. Public Library of the City of Boston. Monthly Bulletin. Vol. I. Nos. 1 to 12. Forty-sixth Annual Report, 1897-98. Annual List of New and important books added to the Public Library of the City of Boston, 1897-1898.
- Bourg. Société de Géographie de l'Ain. Bulletin. 1898. January to December.
- Bremen. Deutsche Geographische Gesellschaft-Blätter. Vol. XXI. Nos. 1 to 4.
- Brest. Société Académique de Brest. Section de Géographie. (Nothing received.)
- Brussels. L'Etat Indépendant du Congo. Bulletin Officiel. 1898. Nos. 1-12.
- Brussels. Société Royale Belge de Géographie. Bulletin. Vol. XXII., 1898. Nos. 1 to 6.
- Brussels. Le Mouvement Géographique. 1898. Nos. 1 to 52.
- Brussels. La Belgique Coloniale. 1898. Nos. 1 to 52. (No. 27 missing.)
- Brussels. Institut Colonial Internationale. Les Fonctionnaires Coloniaux, Documents Officiels. Series III. Régime foncier aux Colonies. Nos. 2, 3, 4.
- Brussels. Société d'Etudes Coloniales. Bulletin, 1898. Nos. 1 to 6.
- Budapest. Société Hongroise de Géographie. Bulletin. Vol. XXVI. Nos. 1 to 10, and Abrégé. List of Members, 1898. L'Isthme de Corinthe et son percement, par Béla Gerster.
- Buenos Aires. Instituto Geografico Argentino. Boletín. Vol. XIX. Nos. 1 to 12.
- Buenos Aires. Direccion General de Estadística. El Comercio Exterior Argentino. Nos. 97 to 100.



- Buenos Aires. Museo Nacional de Buenos Aires. Comunicaciones. Vol. I. Nos. 1, 2.
- Buenos Aires. Ville de Buenos Aires. Annuaire Statistique. VII<sup>me</sup>. Année, 1897.
- Buenos Aires. Monthly Bulletin of Municipal Statistics. 1898. January, April to December.
- Cairo. Société Khédéviale de Géographie. Bulletin. Series V. Nos. 1, 2, 3.
- Cambridge. Peabody Museum of American Archaeology and Ethnology. Harvard University. Memoirs. Vol. I. Nos. 4, 5. Papers. Vol. I. Nos. 1 to 6.
- Cassel. Verein für Erdkunde. (Nothing received.)
- Copenhagen. Geografisk Tidsskrift udgivet af Bestyrelsen for det Kongelige danske geografisk Selskab. Vol. XIV. Nos. 5 to 8.
- Darmstadt. Verein für Erdkunde. Notizblatt. Vol. IV. Part 18.
- Dijon. Société Bourguignonne de Géographie et d'Histoire. Mémoires. Tome XIV.
- Douai. Union Géographique du Nord de la France. Bulletin. Vol. XIX. Nos. 1 to 4.
- Dresden. Verein für Erdkunde. Jahresbericht XXVI.
- Dunkerque. Société de Géographie. Bulletin. 1898. Nos. 1, 2.
- Geneva. Le Globe. Organe de la Société de Géographie. Vol. XXXVII. Nos. 1, 2, and Mémoires. Special Number: Comptes rendus du XIII<sup>me</sup>. Congrès des Sociétés Suisses de Géographie.
- Geneva. Société des Anciens Elèves de l'Ecole Supérieure. Bulletin. Nos. 38 to 41.
- Griefswald. Geographischen Gesellschaft zu Griefswald. VI. Jahresbericht. II. Teil. 1896-98.
- Guatemala. Direccion General de Estadistica. Censo General. 1898.
- Halle. Verein für Erdkunde. Mitteilungen. 1898.
- Hamburg. Geographische Gesellschaft. (Nothing received.)
- Havre. Société de Géographie Commerciale. Bulletin. Vol. XV. Nos. 1 to 4.
- Havre. Société Géologique de Normandie. (Nothing received.)
- Helsingfors. Société de Géographie de Finlande. (Nothing received.)
- Helsingfors. Velenskagliga Meddelanden af Geografiska Föreningen. (Nothing received.)
- Hermannstadt. Siebenbürgischen (Transylvanian) Karpathenverein. Jahrbuch XVIII. 1898. (With four fine Heliogravures of the Carpathians.)
- Irkutsk. Imperial Russian Geographical Society. East Siberian Section. Journal. 1898. Tome XXIX. No. 1.
- Jena. Geographische Gesellschaft. Mitteilungen. Nos. 16, 17.
- Kazan. Naturalists' Society of the Imperial University. Journal. Vol. XXXII. Nos. 1 to 6. Report, 1896-1897.
- Königsberg. Geographische Gesellschaft. Report, 1881-1898.
- La Paz. Oficina Nacional de Inmigración, Estadística y Propaganda Geografica. (Also:—Sociedad Geografica de La Paz.) Tadeo Haenke, por V. Ballivian. Expedicion del Coronel Don Jose M. Pando. Boletin del Observatorio Meteorologico, Marzo y Abril.
- La Paz. Sociedad Geografica de La Paz. Boletin. Vol. I. No. 2.
- La Plata. Direccion General de Estadistica de la Provincia de Buenos Aires. Memoria Demográfica. Año 1895.
- La Plata. Museo de La Plata. Revista. Tome VIII. 1898. Notes preliminaires sur une excursion aux territoires du Neuquen, Rio Negro, Chubut et Santa Cruz. La Question de Limite Chilimo-Argentino con especial consideracion de la Patagonia.
- Leipzig. Verein für Erdkunde. Mitteilungen. 1897.

# 418 *The Journal of the Manchester Geographical Society.*

- Lille. Société de Géographie. Bulletin. 1898. January to December.
- Lima. Sociedad Geografica. Boletin. 1898. January to June. Catálogo. Primera Seccion. 1898.
- Lisbon. Sociedade de Geographia de Lisboa. Boletim. Vol. XVI. Nos. 7 to 12.
- Lübeck. Geographischen Gesellschaft und Naturhistorischen Museums. (Nothing received.)
- Lwowie (Lemberg). Gazeta Handlowo-Geograficzna. 1898. Vol. IV. Nos. 1 to 24.
- Lwowie. Towarzystwa Ludozonawczego we Lwowie. Lud. Vol. IV. Nos. 1, 3, 4.
- Madison. Wisconsin Academy of Sciences, Arts, and Letters. Transactions. Vol. XI. 1896-7.
- Madison. Wisconsin Geological and Natural History Survey. Bulletin. Series I. Nos. 1, 2.
- Madrid. Sociedad Geografica. Boletin. Tome XL. Nos. 1 to 12. Revista de Geografia Colonial y Mercantil. Nos. 9 to 15.
- Madrid. Ayuntamiento de Madrid. Boletin. 1898. Nos. 99 to 104.
- Marseille. Société de Géographie. Bulletin. Vol. XXII. Nos. 1 to 4. Etudes sur Marseille et la Provence.
- Medellin. El Industrial. Vol. I. Nos. 1, 2, 4.
- Meriden, Conn. Meriden Scientific Association. Transactions. Vol. VIII. 1897-98.
- Metz. Verein für Erdkunde. Jahresbericht XX. 1897-98.
- Mexico. Sociedad Científica "Antonio Alzate." Memorias y Revista. Vol. XI. Nos. 1 to 12.
- Milan. L'Esplorazione Commerciale. 1898. Nos. 1 to 12.
- Milan. L'Universo. Geografia per Tutti. 1898. Nos. 1 to 24.
- Montevideo. Museo Nacional. Anales. Tome II. Nos. 8 to 10.
- Montpellier. Société Languedocienne de Géographie. Bulletin. Vol. XXI. Nos. 1 to 4.
- Moscow. Geographical Section of the Imperial Society of Natural Science of the University. Journal, 1898. Nos. 1 to 4.
- Munich. Geographische Gesellschaft. Jahresbericht für 1896-1897.
- Nancy. Société de Géographie de l'Est. Bulletin, 1898. Nos. 1 to 4.
- Nantes. Société de Géographie. Bulletin, 1898.
- Naples. "L'Oriente." Revista Trimestrale del R. Istituto Orientale in Napoli. (Nothing received.)
- Naples. Société Africana d'Italia. (Nothing received.)
- Neuchatel. Société Neuchateloise de Géographie. Bulletin, 1898. Vol. X.
- New York. American Geographical Society. Bulletin. Vol. XXX. Nos. 2 to 5.
- New York. American Museum of Natural History. Bulletin. Vol. X.; XI. Part 1. Annual Reports for 1896 and 1897.
- New York. "Illustrated Christian World." 1898. January to May.
- New York. Journal of School Geography. 1898. Vol. II. Nos. 1 to 10.
- New York. Public Library (Astor Lenox and Tilden Foundations.) Bulletin. Vol. II. Nos. 1 to 12.
- Nürnberg. Naturhistorische Gesellschaft. Abhandlungen. XI. Band.
- Odessa. Club Alpin de Crimée. Bulletin, 1898. Nos. 1 to 12.
- Oran. Société de Géographie et d'Archéologie. Bulletin Trimestriel. 1898. April to December. Supplement, 20th Anniversary. 1878-1898.
- Paris. Annales de Géographie. Published by A. Colin & Co. Vol. VII. Nos. 31 to 36. La Question des Limites Chilo-Argentines, by Henri S. Delachaux (extract from Annales de Géographie. No. 33.)

- Paris. Société Antislavagiste de France. *Revue Trimestrielle*. 1898. Nos. 1 to 4.
- Paris. Société de Géographie. *Bulletin*. Vol. XIX. Nos. 1 to 4.
- Paris. Société de Géographie. *Comptes Rendus des Séances*. 1898. Nos. 1 to 9.
- Paris. Société de Géographie Commerciale. *Bulletin*. Vol. XX. Nos. 1 to 12.
- Paris. Société de Spéléologie. *Bulletin (Spelunca)*. 1898. Nos. 13 to 15.
- Paris. Société de Topographie. *Bulletin*. 1898. Nos. 1 to 12.
- Paris. Comité de l'Afrique Française. *Bulletin*. 1898. Nos. 1 to 12.
- Paris. "Le Tour du Monde." Published by Hachette & Co. 1898. Nos. 1 to 53.
- Paris. *Revue Géographique Internationale* (M. Georges Renaud, Editor.) 1898. January, February, April, June to December.
- Philadelphia. American Philosophical Society. *Proceedings*. Nos. 157, 158. The Finding of the Fossil Sloth at Big Bone Base, Tennessee, in 1896, by Henry C. Mercer. (Reprinted from Vol. XXXVI. No. 154.)
- Philadelphia. Free Museum of Science and Art. *Bulletin*. Vol. I. Nos. 3, 4.
- Philadelphia. The Department of Archaeology and Palæontology, University of Pennsylvania. A preliminary Report on the Exploration of Ancient Key-Dweller Remains on the Gulf Coast of Florida, by F. H. Cushing.
- Prague. Société de Géographie tchèque à Prague. *Revue*. 1898. Vol. IV.
- Rochefort. Société de Géographie. *Bulletin*. 1898. Nos. 1 to 4.
- Roma. Società Geografica Italiana. *Bolletino*. Series III. Vol. XI. Nos. 1 to 12
- . *Memorie*. Vol. VIII. Parts 1, 2, and Supplement.
- Roma. *Revista Geografica Italiana*. 1898. Nos. 1 to 10.

Presented by Signor Luigi Bodio.

- Rome. *Institute Internationale de Statistique*. *Bulletin*. Tome X. Part 2.
- . *Annuario Statistico Italiano*. 1898.
- . *Popolazione*. *Movimento della Stato Civile*. 1897.
- . *Statistica della Emigrazione Italiana*. 1897.
- 
- Rome. "Cosmos" Presented by Profr. Guido Cora. Series II. Vol. XII. 1894-96. Parts 11, 12.
- Rouen. Société Normande de Géographie. *Bulletin*. 1898. January to December.
- Salisbury. Rhodesia. The "Rhodesian Times and Financial News." Vol. IV. Nos. 76 to 94.
- San Francisco. Southern Pacific Railway. "Sunset." Vol. I. Nos. 1 to 6; II. 1, 2.
- San Francisco. Geographical Society of the Pacific. (Nothing received.)
- San José. Instituto Fisico-Geografico y del Museo Nacional de Costa Rica. *Anales*. Tome VII. 1894. Informe sobre los Trabazos practicados en el Inst. Fisico, &c. 1896-7; 1897-8.
- St. Nazaire. Société de Géographie. (No Bulletin received.) Congrès National des Sociétés Françaises de Géographie. *Comptes Rendus*. XVIII. Session, 1897.
- St. Petersburg. Imperial Russian Geographical Society. *Journal*. Vol. XXXIV. Nos. 1 to 6, and Report for 1897.
- Shanghai. China Branch of the Royal Asiatic Society. *Journal*. Vol. XXVIII. 1893-4.
- Shanghai. Imperial Maritime Customs, China. I.: Statistical Series. No. 2, Customs Gazette, Nos. 117 to 120, January to December, 1898; Nos. 3 & 4. Part I., Returns of Trade and Trade Reports for 1897; Part II., Reports and Statistics for each Port, with Report on Foreign Trade. II.: Special Series. Medical Reports for Eighteen Months, ending September 30th, 1898. 54th, 55th, and 56th Issues.



420 *The Journal of the Manchester Geographical Society.*

- Stockholm. Svenska Sällskapet för Antropologi och Geografi. Ymer, 1898. Nos. 1 to 4.
- Stuttgart. Württembergische Verein für Handelsgeographie. XV. und XVI. Jahresbericht. 1896-7.
- Tokio. Geographical Society. Journal. Vol. X. Nos. 109 to 120.
- Toulouse. Société de Géographie. Bulletin, 1898. Nos. 1 to 6.
- Tours. Société de Géographie. Revue, 1898. January to December.
- Upsala. Geological Institution of the University of Upsala. Bulletin. Vol. IV. No. 6. 1897. Meddelanden. No. 23.
- Vienna. Geographische Gesellschaft. Mittheilungen. Vol. XLI. Nos. 1 to 12.
- Vienna. K. K. Naturhistorisches Hofmuseum. (Nothing received.)
- Washington. National Geographic Magazine. 1898. Vol. IX. Nos. 2 to 4, 6 to 12. (Nos. 1 and 5 not received.)
- Washington. U. S. Coast and Geodetic Survey. Report for the Year ending June, 1896.
- Washington. U. S. Geological Survey. C. D. Walcott, Director. Eighteenth Annual Report. Parts I., II., III., IV., V. (in two parts.)
- Washington. U. S. Geological Survey. Bulletins. Nos. 88, 89. Monograph. Vol. XXX.
- Washington. Smithsonian Institution. (No Report received.) Reprints from the Smithsonian Report for 1896. "The Physical Geography of Australia," by J. P. Thomson. "Arctic Explorations," by A. H. Markham.
- Washington. U. S. National Museum. Report for the year ending June 30th, 1896.
- Washington. U. S. Department of Agriculture. Report of the Chief of the Weather Bureau for 1896-7.
- Washington. U. S. Department of Agriculture. Weather Bureau. Monthly Weather Review. 1899. January to December, and Annual Summary.





WATER COMING FROM UNDER A BED OF LAVA.  
Kahmanshunga, Iceland.



[By permission of F. W. W. Howell.]

[See pp. 219-221.]

GULLFOSS. ICELAND.



THE  
JOURNAL  
OF THE  
MANCHESTER GEOGRAPHICAL  
SOCIETY.



---

VOL. XV.

---

MANCHESTER:  
PRINTED FOR THE MANCHESTER GEOGRAPHICAL SOCIETY  
1899.

THE  
COUNCIL AND OFFICERS  
OF THE  
MANCHESTER GEOGRAPHICAL SOCIETY  
FOR 1900-1901.

*President.*

His Royal Highness the DUKE OF YORK, K.G.

*Vice-Presidents.*

His Eminence CARDINAL VAUGHAN.  
His Grace the DUKE OF DEVONSHIRE, K.G.  
The Right Hon. the EARL OF DERBY, K.G.  
The Right Hon. the EARL EGERTON OF TATTON  
The Right Rev. the LORD BISHOP OF MANCHESTER.  
The Right Hon. the LORD MAYOR OF MANCHESTER.  
His Worship the MAYOR OF ACCRINGTON.  
His Worship the MAYOR OF OLDHAM.  
His Worship the MAYOR OF SALFORD.  
The VICE-CHANCELLOR of the VICTORIA UNIVERSITY.  
The PRINCIPAL OF OWENS COLLEGE  
The Right Rev. MONSIGNOR GADD, V.G.  
The Right Hon. A. J. BALFOUR, M.P.  
Sir W. H. HOULDSWORTH, Bart., M.P.  
Sir HUMPHREY F. DE TRAFFORD, Bart.  
SIR F. F. FORBES ADAM, C.I.E.  
Alderman SIR BOSDIN T. LEECH, J.P.  
Alderman SIR JOSEPH LEIGH, J.P.  
Mr. FREDERIC BURTON.

The Very Rev. L. C. CASARTELLI, M.A., Ph.D.  
Mr. F. CAWLEY, M.P.  
Professor W. BOYD DAWKINS, M.A., F.R.S.  
Professor T. H. CORE, M.A.  
Mr. E. F. G. HATCH, M.P.  
Mr. W. H. HOLLAND, M.P.  
Mr. HENRY LEE, J.P.  
Mr. WILLIAM MATHER, M.P.  
Mr. HARRY NUTTALL, *Vice-Chairman of the Council.*  
Mr. SAMUEL OGDEN, J.P.  
Mr. HERBERT PHILIPS, J.P.  
Mr. F. PLATT-HIGGINS, M.P.  
Mr. FRITZ REISS.  
Mr. C. E. SCHWANN, M.P.  
Mr. C. P. SCOTT, M.P.  
Mr. H. SOWLER.  
Rev. S. A. STEINTHAL, F.R.G.S., F.I.Inst.,  
*Chairman of the Council.*  
Mr. T. R. WILKINSON.  
Mr. F. ZIMMERN.

*Trustees.*

Mr. S. H. BROOKS, F.I.Inst.      Mr. SIDNEY L. KEYMER, F.R.G.S.  
Mr. E. W. MELLOR, J.P., F.R.G.S., F.I.Inst.

*Honorary Treasurer.*

Mr. S. OPPENHEIM, J.P., (Vice-Consul for Austria-Hungary).

Mr. J. E. BALMER, F.R.G.S.  
Mr. J. C. BLAKE, F.R.G.S., F.I.Inst.  
Mr. Alderman I. BOWES.  
Mr. G. T. BOWES.  
Mr. J. C. CHORLTON.  
Mr. C. COLLMANN, Consul for the German Empire.  
Mr. H. T. CROOK, C.E.  
Mr. THOMAS DENTIF.  
Mr. Councillor T. HASSALL.  
Mr. J. E. KING, M.A. High Master, Manchester Grammar School.

Mr. N. KOLP.  
Lady LEECH.  
Mr. D. A. LITTLE.  
Mr. T. C. MIDDLETON, J.P.  
Mr. JOHN R. NEWBY.  
Mr. R. C. PHILLIPS.  
Mrs. PICKERING.  
Mr. W. J. SINCLAIR, M.D., J.P.  
Mr. GEO. THOMAS.  
Mr. J. THOMPSON.  
Mr. H. WOOLLEY, F.R.G.S.

*Honorary Secretaries.*

Mr. F. ZIMMERN.      Mr. J. D. WILDE, M.A.  
Mr. J. HOWARD REED.

*Honorary Auditors.*

Mr. WILLIAM ALDRED, F.C.A.      Mr. THEODORE GREGORY, F.C.A.

*Honorary Secretary Victorians.*

Mr. C. A. CLARKE, 24, Seymour Road, Cheetham Hill, Manchester.

*Secretary and Editor.*

ELI SOWERBUTTS, F.R.G.S., F.I.Inst., 16, St. Mary's Parsonage, Manchester.

*Honorary Local Secretaries.*

South Manchester and Moss Side, Mr. J. HOWARD REED.  
Oldham, Mr. F. RIGG.  
Lytham, Mr. J. T. LIGHTWOOD.  
Stockport, Mr. T. H. RATHBONE.

Leigh, Tyldesley, &c. Mr. J. WARD.  
Urnston and Flixton, Miss A. E. LAW.  
Leeds, Mrs JESSIE E. SHRIEVE.  
Blackpool and Neighbourhood, Mr. J. RIGBY.  
Ashton and Stalybridge, Mr. C. T. I. GARNER.

*Affiliated Societies.*

Burnley Literary and Scientific Club.  
Carlile Institute, Meltham.  
Chadwick Museum, Corporation of Bolton.  
Eccles Provident and Industrial Co-operative Society.  
Farnworth with Kersley Parish Church Mutual Improvement Society.  
Free Libraries Committee, City of Manchester.  
Free Libraries Committee, Royal Borough of Salford.

Free Libraries Committee, Borough of Oldham.  
Golborne Technical Committee.  
Governors of Balshaw's School, Leyland.  
Horwich Industrial Co-operative Society.  
Independent Methodist Literary Society.  
Leigh Literary Society.  
Moss Side School Board.  
Prestwich Co-operative and Industrial Society.  
Walkden Co-operative Society.

# CONTENTS.

A	PAGE
<i>Abyssinie, Une Mission Francaise. Par S. Vigneras</i> .....	158
Additions to Library—	
Maps ( <i>see</i> Maps added to Library).	
Atlases, Album*, &c. ( <i>see</i> Atlases, &c., added to Library).	
Books ( <i>see</i> Books, &c, added to Library).	
Corresponding Societies ( <i>see</i> Additions to Library from Corresponding Societies).	
Additions to Library from Corresponding Societies—	
British .....	269
Missionary .....	271
Colonial .....	272
Foreign .....	161
Africa, Bowes, Alderman I., on the Barrage of the Nile .....	193
— on the New Nile Dams .....	226
— East, Islands ( <i>see Ostafrikanischen Inseln</i> ) .....	201
— Egypt and the Monuments. By Col. J. J. Mellor, M.P. ....	221
— German, East. By Rev. C. W. Porter, M.A. ....	183
— Nile, Barrage of the. By Alderman Isaac Bowes .....	193
— Nile Dams, the New. By Alderman I. Bowes .....	226
— <i>Ostafrikanischen Inseln, Bibliothek der Länderkunde. Bd Dr. E. Keller</i> ..	216
Afghanistan, the Amer and his Court. By Dr. Lillias Hamilton .....	63
Albion Hotel, reception of Members and Concert to, by Mr. S. H. Brooks at ..	61
Albrow, Mr. H., on Kola as a Timber Port. ....	181
Amazon, Animal Life in Great Variety .....	188
— Ants and their Ways .....	189
— Civilised People speak Portuguese ..	190
— Description of River .....	185
— Great Heat and Causes of it .....	187
— Head Shrinking, a Horrible Practice ..	189
— Indian Mode of Fishing .....	183
— India Rubber, its Gathering and Preparation .....	191
— Money in Use .....	160
— Navigation of River .....	188
— Peculiar Names of Streets in the Cities .....	192
— Politeness of Civilised .....	190
— Prevalence of Lightning in the Dry Season .....	187
— Savage People on the River .....	189
— Vegetable Kingdom .....	190
America, Amazon, a Thousand Miles up the. By Dr. J. Jones .....	185
— <i>Buenos Aires—Estudios Etnograficos. By F. F. Outes</i> .....	216
— <i>Costa Rica, the Republic of. By G. Niederlein</i> .....	215
— <i>Cave Regions of the Ozarks and Black Hills. By L. Agnes Owen</i> .....	216
— Jones, Dr. J., on a Thousand Miles up the Amazon .....	185
Annual Meeting of the Society .....	128
<i>Antarktis. Von Karl Fricke</i> .....	158
Arctic Regions, Five Voyages. W. S. Bruce, F.R.G.S. ....	57

	PAGE
Atlases, Albums, &c., added to Library ..	265
"Aven" Causse Néjean, Exploration of. C. A. Martel and A. Vire .....	55

## B

Basle .....	2
Belfort .....	2
Boggart Hole Clough, Visit to .....	127
Books added to Library—	
General .....	265
British Isles .....	266
Europe .....	267
Asia .....	267
Africa .....	268
America .....	269
Oceania .....	269
Boraston, J. M.,—Travels in Brazil in 1898..	59
Brazil, Travels in. 1898. By J. M. Boraston .....	59
Brindisi .....	160
Brooks, S. H., Notice of life of .....	60
— on Journey to the Isles of Scilly .....	60, 61
Bruce, W. S., F.R.S.G.S., on Five Voyages to the Arctic Regions .....	57

## C

Cambridge, The Town and College Buildings. By Mark L. Sykes, F.R.M.S. ....	127
Casati, Capt., Cake .....	56
Changes (Political) in Maps .....	24
Children's Party .....	56
China, Absurd idea of 400 Millions of Chinese over-running the World..	65
— Britain at Wei Hai Wei .....	66
— Chinese, honest .....	70
— Corruption in Official Circles .....	71
— France at Kiaochow .....	66
— How is Britain to set about preserving Integrity of .....	69
— Integrity of, should be preserved ..	67
— Japanese attack on .....	65
— Not able to defend herself .....	67
— Opium War .....	70
— Reformation, result .....	72
— Reforms—Governmental and Financial .....	70
— Russians at Port Arthur .....	66
— Should Britain preserve the integrity of .....	68
— "Sick Man" .....	65
— The Panacea for. By Mr. G. M. E. Playfair, Consul at Swatow .....	65
— To be Scourge of Western Europe impossible .....	66
— Yangtze—Various meanings of, to Chinese and Europeans .....	73
Cleopatra Terrace, Mammoth Hot Springs. ....	52
Collection of Manchester Geographical Society towards a Commercial and Geographical Museum .....	174
Commercial School of Manchester, the future. Mr. Reuben Spencer .....	132
Copper Coins, illustrating changes in Political Map of Europe in 19th Century. D. F. Howorth .....	24, 64
Copper Coins illustrating Political changes ..	25, 36
Correspondence .....	57, 123, 217, 218, 226, 228, 231, 232, 233.



	PAGE
Council of the Society— Election .....	129
Cuba. City of Matanzas .....	153
— City of Havana .....	147
— City of Pinar del Rio .....	157
— City of Puerto Principe .....	156
— City of Santa Clara .....	157
— City of Santiago .....	152
— Coffee growing in .....	146
— Description of .....	137
— Government and Political divisions ..	138
— Havana, The Cathedral and Christopher Columbus .....	151
— Natural products .....	142
— "Queen of the Antilles." By Mr. J. Howard Reed .....	137
— Sugar Cane growing in .....	143
— The Spanish in .....	140
— The Tobacco Plant in .....	144
— Women in .....	141

## E

Europe, Changes in Political Map in 19th Century. D. F. Howarth .....	64
— Andalusia. By Rev. S. A. Steinthal, F.R.G.S. ....	219
— Berlin, Description of. By Rev. S. A. Steinthal, F.R.G.S. ....	227
— Berlin, Seventh International Congress of Geography at. By the Chairman (Rev. S. A. Steinthal) ..	227
— British Association Meeting at Dover. By the Secretary .....	219
— Carlile Institute at Meltham .....	205
— Commercial Geography of the British Isles. By Dr. H. Robertson, F.R.G.S. ....	215
— Dover, Description of. By Secretary. Exhibition, Paris, 1900 .....	192
— Howell, F. W. W., F.R.G.S. First Crossing of Lång Jökull .....	219
— Hungary and the Carpathians. By S. Wells, F.R.G.S. ....	201, 218
— Iceland, the First Crossing of Lång Jökull. By F. W. W. Howell, F.R.G.S. ....	219
— Manchester Ship Canal, Cutting the First Sod .....	214
— <i>Maples, C. D., Journals and Papers</i> <i>et. c.</i> By Miss Ellen Maples .....	215
— Meltham, the Carlile Institute .....	205
— Paris Exhibition, 1900 .....	192
— Scilly Isles, Sketches in. By Joel Wainwright, J. P. ....	228, 229
— Seventh International Congress of Geography at Berlin. By the Chairman of the Council .....	227
— Sheffield, Description of Visit to Sheffield, John Brown and Co., Atkinson Bros. Ltd., and the University College. By the Secretary .....	227
— Smithson, G. E. T., the late. Portrait and Inscription on Tablet .....	212, 213
— Sowerbutts, Eli. Description of Visit to Sheffield .....	219
— Steinthal, Rev. S. A., on Andalusia ..	227
— — on the City of Berlin .....	217
— — on the Seventh International Congress of Geography at Berlin ..	217
— Wainwright, Joel, J. P. Sketches in Scilly Islands .....	228, 229
— Wells, S., F.R.G.S., on Hungary and the Carpathians .....	201
— Excelsior Geyser, Semi-qui-scent, with Park Conveyance .....	54

## F

*Field Testing for Gold and Silver ; a practical manual.* By Mr. Hamilton Merritt, F.G.S. .... 200

	PAGE
France, Cave of "Aven" (Lozere) .....	55
— Stalagmites in the "Aven" .....	55
<i>Fricker, von Dr. Karl, on Antarktis</i> .....	159

## G

Gadd, Very Rev. Monsignor, V G., on Mr. S. H. Brooks' address and the Concert .....	63
Gama, Vasco da, celebration at Lisbon, 1898 .....	75
German John R. Newby .....	184
German East Africa, National products in .....	183
— By Rev. C. W. Porter, M. A. ....	
General Astronomy, The World in Space. By Mr. H. C. Martin .....	230
— Martin, H. C., on the World in Space (Astronomy) .....	230
— <i>Arabic self-taught. By G. A. Thimm, F.R.G.S.</i> .....	216
— <i>Spiderland. By Rose H. Thomas</i> .....	216
— Smithson, the late G. E. T. Bronze Tablet to his memory at Louvain Hall, Barras Bridge .....	213
Geography, Commercial (applied) the teaching of. By A. J. Herbertson .....	58
— Prize distribution .....	56
Geographical Societies Conference on Geographical and Commercial Museums .....	133

## H

Hailwood, Councillor, on Manchester Trade and Commerce	132
Hamilton, Dr. L., on the Ameer and his Court	63
Hatch, E. F. G., M.P., on Our Indian Empire	63, 159
Herbertson, A. J., Ph.D., on The Teaching of Applied (commercial) Geography	58
Hopkinson, Mr. Alfred, Principal of Owens College, on Commercial School of Manchester	132
Howorth, D. F., Changes in the Political Map of Europe, 19th Century. Illustrated by Copper Coins	24
Hungary. Budapest	6
— Excursions at	8
— Banquet at Exhibition	7
— Exhibition, description of	8
— Carpathians	204
— Caves and Caverns	202
— Costumes of Hungarian Nobles	202
— Disappearing Rivers	202
— Doleans of	202
— Forests	203
— Great Plain of	201
— Gipsies of, in Carpathians	204
— Gipsy Music at Exhibition, Budapest	9
— Hot Wind	204
— Journey (incidents) from Budapest to Tatra	12
— King of (not Emperor)	6
— Mountain districts of	201
— Native Carriage	202
— People of, described	203
— Polish Neighbours	204
— Presbourg	5
— Religious Sects	203
— Rocks	202
— Tatra, Visit to	11
— — Bad Schmecks or Tatra Füred	18
— — Czorba See, a Mountain Lake, visit to	23
— — Doboschau described	14
— — Dobosna. Ice Caves	16
— — Lomni zer Spitze, ascent of	20
— — Mountain Scenes	16
— — Podrá-Pelka described	18

	PAGE
Hungary, Town Hall (Rath Haus) Budapest .....	7
— Travelling in .....	201
I	
India, Agra, the Taj Mahal .....	170, 171
— Benares, Bathing "Ghauts" .....	168
— Bombay, the Parsees .....	165
— Cashmere .....	172
— City and Fort of Peshawur .....	172
— City of Agra .....	169
— City of Benares .....	167
— City of Bombay .....	163
— City of Calcutta .....	166
— City of Cawnpore .....	169
— City of Ja-ohabad .....	171
— City of Lucknow .....	169
— Customs of Native Women .....	166
— Famine Dangers .....	172
— Described .....	162
— Native States, Jummoo and Kapurthala .....	173
— The Afridis .....	172
— The Khyber Pass .....	172
— The Mutiny .....	169
Indian Empire, Our. By Mr. E. F. G. Hatch, M.P. ....	63, 159
Isles of the West: .....	134

K

Klondyke .....	123
Kola as a Timber Port. By Mr. H. Albrow .....	181

L

Lång Jökull, the First Crossing of. By F. W. Howell, F.R.G.S. ....	219
Latham, J. B. Paris to Budapest .....	1
— Visit to the Tatra .....	11
Library Additions (see Additions to Library).	
Little, Mrs. A., on Journeys on the Yang-tse-kiang .....	56

M

Macdonald, Col. J. R. L., Dinner to .....	129
Manchester Commercial School. Mr. Alfred Hopkinson .....	132
— <i>Courier</i> , Remarks on the Manchester Geographical Society .....	132
— Geographical Society and its Work. By Sir J. Leigh .....	131
— Geographical Society and its Work. By Mr. Harry Nuttall .....	131
— Geographical Society and its Work. By Mr. J. Howard Reed .....	131
— Geographical Society and its Work. By Mr. Eli Sowerbutts .....	131
— Geographical Society, remarks on, by the <i>Manchester Courier</i> .....	132
— Trade and Commerce. By Dr. Sinclair .....	132
— Ship Canal. Visit to, in the s.s. "Gower" .....	128
Maps added to Library—	
General .....	262
Europe .....	262
Asia .....	263
Africa .....	263
America .....	264
Oceania .....	264
Antarctic Regions .....	264
Maps, New, English and Foreign, exhibited and described by the Secretary ..	127
Martel and Vire. Exploration of "Aven" at Causse Néjean (Lozère) .....	55

Mellor, Col. J. J., M.P., on Egypt and the Monuments .....	221
Meltham, Carlile Institute .....	134
— Description of .....	207
— Opening of .....	206, 209
— Carlile, J. W., Donor of Institute, his Address .....	206
— Moors at, and Holmfirth .....	134
— Moor Cock Inn (Bills o' Jacks) .....	134
— Origin of Carlile Institute .....	205
— Town Hall .....	134
— Visit to, by the Society .....	134
Members Elected ..57, 59, 64, 217, 218, 226, 227	
— Election of ..57, 59, 64, 217, 218, 226, 227	
— List of, December 31st, 1899 .....	250-256
— Portrait Presented .....	64, 217, 219
Museums, Commercial and Geographical Conference of Geographical Societies on .....	133
— Commercial and Geographical. Copy of Letter to Geographical Societies on .....	175

N

Natural Products of German East Africa. By Rev. C. W. Porter, M.A. ....	184
Newby, Mr. John R., on Portugal, the Portuguese and the Vasco da Gama Celebration, 1891 .....	75
Nile, Attempts to make New Barrages ..	198
— Assiut dam at, as arranged by Mr. Willcocks .....	199
— Assouan dam as arranged by Mr. Willcocks .....	199
— Completion of work of barrages .....	200
— Cost of New Dams and mode of Works ..	199
— Deposit, richness and quality of, left by the Annual Overflow .....	197
— Description of River .....	195
— Egyptian Government and Sir John Aird and Co .....	194
— Health of staff at work on barrages ..	199
— History of modern dams from Napoleon I. ....	197
— Increased production already obtained by river improvements .....	198
— Milner, Sir Alfred, quoted on the value of Nile to Egypt .....	195
— Natural Barriers .....	193
— Primitive water-works on river .....	196
— Proposals for obtaining capital to make the new barrages .....	194
— Sudd removal .....	196
— The Delta described .....	196
Nuttall, Mr. Harry, on Manchester Geographical Society .....	131

O

Ophir. By Dr. Carl Peters .....	182
---------------------------------	-----

P

Panorama on the Brenner Line .....	3
Paris to Budapest. J. B. Latham .....	1
<i>Peaks and Pines, another Norway book.</i> By J. A. Lees .....	200
Peters, Dr. Carl, on "Ophir", his recent Discoveries .....	182
Pitcairn Island .....	10
Playfair, G. M. E., Consul, on the Panacea for China .....	65
Porter, Rev. C. W., M.A., on German East Africa .....	183
Portrait of Mr. S. H. Brooks .....	60
Portraits of Members, Presented .....	64
Portugal, Berlen Islands .....	80
— Cape Finisterre .....	80
— Church of Batalha .....	119

	PAGE		PAGE
Portugal, Cintra .....	110	Reports, 7th International Geographical Congress at Berlin. By the Chairman (Rev. S. A. Steinthal, F.R.G.S.) ..	234
— Dom Fernando's Garden .....	112	Republics of Europe, from 1792-1898 .....	37
— The Palace .....	80	— of Revolutionary Period, 1792-1804-1898 .....	37
— Former Boundaries .....	109	Review of Year's Geographical Work. By the Secretary .....	56
— How to Leave .....	115	Rules of the Society .....	257-260
— King and Queen of .....	91		
— Leiria .....	116	S	
— Lisbon, a Menu .....	100	Salzburg .....	3
— Art Gallery .....	89	Scilly Isles .....	134
— Black Horse Square .....	96	— Visit of Society to .....	135
— Selem Church .....	98	<i>Scottish Jacobites, their Songs, Music and Battles. By T. Newbigging.</i> .....	233
— Bull Fights .....	84	Scottish Scenery, Song and Story. By Mr. J. S. Reid .....	123
— Custom House .....	81	Simplon Tunnel .....	10
— English Residents .....	88	Sinclair, Dr., on Manchester Trade and Commerce .....	132
— Fish Market .....	94	Smithson, G. E. F., death of, and notice of life .....	125
— Foundling Hospital .....	107	Sowerbutts, Eli, on Manchester Geographical Society .....	131
— Geographical Society .....	89	Spain. Vigo .....	122
— Land Tenure .....	108	Spencer, Mr. Reuben, on the future Commercial School of Manchester .....	132
— Meeting of da Gama Celebration .....	91	Steinthal, Rev. S. A., on Her Majesty the Queen .....	130
— Opera House .....	107	Suez Canal .....	160
— Palace of the King (The Necessidades) .....	106	Sykes, Mr. M. L., F.R.M.S., on the Town and College Buildings of Cambridge .....	127
— Public Gardens .....	99		
— Smoking in .....	101	T	
— street Cries .....	93	Tatra Mountains, Visit to. J. B. Latham..	11
— The Arsenal .....	106		
— The Churches—Cathedral, St. Vincente, St. Roque, English Church .....	103	U	
— The City .....	100	Uganda Protectorate, described by Col. J. R. L. Macdonald .....	129
— The Hotel Central .....	97	U.S.A. Falls and Canon of the Upper Yellowstone .....	50
— The Military in .....	101	— Geyser of Yellowstone .....	41
— The Prison .....	102	— Hot Springs of Yellowstone .....	42
— The Town Hall .....	96	— Mud springs of Yellowstone .....	43
— The Umbrella .....	101	— Nomenclature of Yellowstone .....	51
— Water Supply .....	87	— Range Peaks and Plateaux of Yellowstone .....	40
— Mafra, its Marble Quarries .....	80	— Rules regulating use of Yellowstone Park .....	53
— On the way, The Gironde .....	78	— Yellowstone Park as a health resort .....	55
— Oporto .....	122	— Description .....	39, 43
— Oporto, the Dom Luiz Bridge .....	122		
— Tagus River and Shores .....	80	V	
— The Language .....	119	Vienna .....	3
— The Portuguese and the Vasco da Gama Celebration, 1898. By Mr. John R. Newby .....	75	— Cathedral .....	3
— The River Minho .....	122	— Danube, Voyage on the Canal of the ..	4
— Vasco da Gama Celebration, 1898 .....	75	— St. Stephen's .....	3
— Voyage to, and Incidents .....	76, 77	Vignéras, on the Mission Française en Abyssinie .....	153
Presentations of Portraits of Members .....	64	Vorarlberg Tunnel .....	3
— to Library and Map Room .....	57, 59, 64, 126, 217, 218, 226, 227		
— to the Commercial and Geographical Museum .....	217	W	
Press Congress at Budapest .....	1	Whitworth Park and Gallery, Visit to ....	128
— Journey of Delegates from Paris to Budapest .....	1	Worswick, Dr. F. H. The Yellowstone Park, U.S.A. .....	38
Proceedings of the Society, January 1st to March 31st .....	56	Wye Valley, The .....	123
— April 1st to September 29th .....	123		
— October 1st to December 31st .....	217	Y	
		Yang-tse-Kiang, described by Mrs. A. Little .....	56
Q		Yellowstone Park, U.S.A. Dr. F. H. Worswick .....	38
Queen, Her Majesty. Rev. S. A. Steinthal, proposed toast .....	130		
		Z	
R		Zurich .....	2
Reed, J. Howard, on Cuba .....	137		
— on Manchester Geographical Society ..	131		
Reid, Mr. J. S., on Scottish scenery, song and story .....	123		
Reports. British Association at Dover. By the Delegate .....	243		
— Conference of Delegates of British Geographical Societies .....	241		
— The Geographical Association. By Dr. Herbertson .....	239		
— The Society, the Auditor, Victorians and Examiners .....	128		



## ILLUSTRATIONS.

	PAGE
Two Views in Iceland—Water coming from under a Bed of Lava and The Gullfoss. By F. W. W. Howell, F.R.G.S. . . . .	Frontispiece.
Hungary : Ice Cave of Dobsina in the Tatra, Lesser Hall Waterfall . . . . .	11
— The Oak Tree in Lesser Hall . . . . .	13
— Grand Hall Ice Rink . . . . .	15
— Grand Ice Hall, View from the Lesser Hall . . . . .	17
— Right Corridor, Hell . . . . .	19
— Left Corridor, Perpendicular Ice Wall, 22 to 33 yards high . . . . .	21
— Cemetery . . . . .	23
Copper Coins. Soldo of the Kingdom of Italy . . . . .	25
— Eight Maravedi of Joseph Bonaparte, King of Spain . . . . .	27
— Doit of Dutch East India . . . . .	27
— Two Pfennig of Jerome Bonaparte, King of Westphalia . . . . .	27
— Three Grana of Joachim Murat, King of Naples . . . . .	27
— Three Centesimi of Lucra . . . . .	27
— Cent of the Netherlands . . . . .	28
— Three Centesimi of Marie Louise, Princess of Parma . . . . .	28
— Five Lepta of the Greek Government . . . . .	29
— Two Bani of Roumania . . . . .	30
— Five Para of Servia . . . . .	30
— Three Groschen of Polish Revolution . . . . .	30
— Five Centimes of Belgium . . . . .	31
— Ten Lepta of Greece . . . . .	31
— One Kreuzer, Hungary . . . . .	31
— Five Centesimi of Venice . . . . .	32
— One Baiocco of Rome . . . . .	32
— Three Centesimi of Tuscany . . . . .	32
— Five Centesimi of Italy . . . . .	33
— Two Pfennig of Germany . . . . .	33
— Three Stotinki of Bulgaria . . . . .	34
— One Piastre of Cyprus . . . . .	35
— Penny of Queen Victoria . . . . .	36
Yellowstone Park, U.S.A. : Excelsior Geyser, rising 250 feet . . . . .	38
— " Old Faithful " Geyser, rising 150 feet . . . . .	41
— Geyser in Quiescent State . . . . .	46
— Grand Fall of the Yellowstone, height 310 feet . . . . .	49
Portugal, Her Majesty the Queen of . . . . .	75
— Procession in honour of Vasco da Gama leaving Rocio Square . . . . .	91
— Praca de Dom Pedro IV., Lisbon . . . . .	95
— Ruins of the Carmo Church, Lisbon . . . . .	97
— View in the Alcantra Gardens . . . . .	99
— A Fruit Seller, Lisbon . . . . .	117
— A Peasant Woman, Portugal . . . . .	118
— Church of Mon stery of Batalha . . . . .	119
— The Founder's Chapel, Batalha . . . . .	120
— West Door, Church of Batalha . . . . .	120
— The Temple of Diana at Evora . . . . .	121
— View on Shipboard, Crossing the Bay . . . . .	122
Smithson, G. E. F., Portrait of . . . . .	125
India, Mount Everest . . . . .	162
— Bombay . . . . .	164
— Bombay : The Municipal Hall . . . . .	165
— Benares : The Ghaut . . . . .	167
— Elephanta Caves . . . . .	168
— Taj Mahal at Agra . . . . .	170
Amazon : Port of Manáos at Low River . . . . .	186
— Post Office in Main Street, Parentins . . . . .	187
— Post Office and Pekin Gardens, Pará . . . . .	190
— Fifteenth of November Square, Manáos . . . . .	191
Meltham : The Carlile Institute, front view . . . . .	205
— Carlile Institute Lecture Hall . . . . .	207
— Front of Town Hall . . . . .	209
— Ivy Cottage (Mr. G. F. Armitage) . . . . .	211
Smithson, the late G. E. F., Portrait of . . . . .	212
Children of Sir W. H. Bailey, Kt., Cutting the First Sod of Manchester Ship Canal . . . . .	214
Iceland : Hot Springs and Glacier Asgardán. By Mr. F. W. W. Howell, F.R.G.S. . . . .	220
— The Geysir. By Mr. F. W. W. Howell, F.R.G.S. (see Frontispiece) . . . . .	221
Scilly, Rocks and S-a from Round Island. By Mr. J. Wainwright, J.P. . . . .	228
— Tregarthen Lily. By Mr. J. Wainwright, J.P. . . . .	229
— Sad Effects of Tea Drinking. By Mr. Joel Wainwright, J.P. . . . .	230
— Large Boulder at Holy Vale. By Mr. J. Wainwright, J.P. . . . .	230
Torquay : A Devoushire Lane. By Mr. J. Wainwright, J.P. . . . .	229

## MAPS.

Portugal . . . . .	79
Cuba . . . . .	139
Mexico, Central America, West Indies, &c. . . . .	155
India . . . . .	159
Egypt. By Lieut.-Col. Watson, C.M.G., &c. . . . .	193
Egypt and Countries adjacent . . . . .	225

\*  
\* \* THE WRITERS OF PAPERS ARE ALONE RESPONSIBLE FOR THEIR OPINIONS.

ALL RIGHTS RESERVED.

# THE JOURNAL

OF THE

## MANCHESTER GEOGRAPHICAL SOCIETY,

---

### FROM PARIS TO BUDAPEST.

By MR. J. B. LATHAM, of Paris.

[Addressed to the Society in the Library, Monday, Dec. 6th, 1897.]

“**W**OULD you go as delegate to the Press Congress at Budapest next month?” The question was put to me at the dinner given by our respected Ambassador, the Marquis of Dufferin and Ava, at the British Embassy, on the occasion of the annual celebration of the Queen’s birthday.

I was taken considerably by surprise at the proposition, which conveyed nothing very definite in itself to my mind. I had only heard vaguely of this Congress, but what the nature of the business might be, or what my co-operation might be required for, was alike unknown to me; still the prospect of a trip to Hungary was too alluring to be lightly rejected. So the answer came, almost spontaneously, “Yes! I should like to go.” The nature of the business represented did not appear to entail great requirements. The programme on the face of it was comprehensive, and its treatment might be presumed to leave a fair amount of latitude.

Briefly stated, the object of this international gathering was to promote closer relations between the press of different countries, and to draw up a species of federation.

The promoters of the Congress had very generously and cleverly been at the pains to secure for the members free passes for the journey, which was not the least inducement to make the trip. Only one country had proved recalcitrant, and impervious to argument. This was Switzerland, which, on principle, refuses passes to its citizens and to foreigners. Besides this ultra-rigorous regulation, which, after all, embodies the true republican theory of equality, there was lacking in the case of Switzerland sufficient motive to derogate from established usage. Switzerland is too well-known and too thoroughly explored to need any baits for tourists; unlike Hungary, which, to the great majority of travellers, is still *terra incognita*.

Our party of delegates consisted of about half a dozen members, who met at the Strasbourg Railway Station, the Paris terminus of the French Eastern Railway, for the night train to Basle, leaving at half-

VOL. XV.—Nos. 1-3—JANUARY TO MARCH, 1899.



past eight. In our number we counted almost as many nationalities as members, including an amiable, sprightly lady, of Polish extraction. Before we had reached the pretty suburb of Nogent-sur-Marne, the carriage was in a cloud of smoke, and in the midst of an animated argument on the influence of woman on letters and journalistic enterprise, the fair Polonaise brilliantly asserted the powers of her sisters, and advocated their right to free trade in literature and a fair field without favour.

We passed Troyes about midnight, and Belfort in the small hours of the morning. The station of this garrison frontier town was almost empty, except for a few officers returning from Paris. At early dawn, soon after three o'clock, we found ourselves crossing a spur of the Vosges, of a highly picturesque character. The line passes over hills between two and three thousand feet high, of a wooded and fertile character. The number of small factories one passed gave evidence of a flourishing industry. This country is one of the seats of the watch and clock manufacture. There are also numerous cloth and saw mills. By eight o'clock the train reached Basle.

It was with feelings of interest that I descended to the platform. I had seen it last as a schoolboy, on my first trip to the Alps, and whatever changes I might have expected to see, none were apparent. It wore the same aspect, all the old familiar figures were there—the English clergyman, with long Alpenstock, and equally long daughters by his side, the Anglo-American contingent of divers kinds, and the modest supply of native tourists, who appear always to take a back seat in their native land.

The route from Basle presents no particular feature of interest until Zurich is reached; here the railway follows the banks of the lake, which is skirted by charming villas and pretty chalets. Most of these have their private boating and bathing establishments, and steam yachts were met with in profusion. Zurich struck me as having shot up and made immense progress. The industrial capital of Switzerland is fully alive to its advantages, and is straining every nerve to hold its own with the more ambitious world cities of the Continent. The railway line, after following the lake for several miles, ascends by a winding track, and gradually takes the traveller into the regions of snow and ice. It was amusing to notice the astonishment with which some of our party remarked these phenomena, unfamiliar at that time of the year, the middle of June; also to hear the different opinions of the Parisians, some opining for the beauty and grandeur of these Alpine landscapes, and others regarding them as objects of repellent beauty, not to be visited by foot of man. The ride along the Wallenstädter See was full of charming surprises. Here the mountains rise sheer from the lake, a height of several thousand feet. The timber industry seems to be in a flourishing state in these parts, and the numerous chalets dotting the hills add to the interest of the scenery.

I do not remember much more of the country between this point and the Austrian frontier, having lapsed into a state of slumber. At Buchs (pronounced books), we changed trains, and our luggage was examined by the Austro-Hungarian Customs department. There is generally a certain difference to be remarked in passing from a Republic to a Monarchy, and it was so here. The smart, well-set-up

Tyrolese officials had an imposing air, and were pronounced "très chic" by the travelling Boulevardiers. The exchange of trains was a decided move for the better; we found ourselves in elegant drawing-room compartment cars, with swivel chairs and luxurious settees, instead of being confined in second-class compartments.

At this stage a panorama of surpassing beauty unrolled itself before our enchanted eyes. We were on the Brenner Line leading over the celebrated Pass of that name, with the latest marvel of engineering work, the Vorarlberg Tunnel, which has only a dozen years of existence.

We ran through the tunnel in twenty minutes, and in saloon carriages, provided with electric light, experienced no sense of the usual dismal subterranean passage. The gradients at this stage of the Pass are pretty steep, something like one foot in twenty-five. Reclining on our comfortable couches, we watched the serpentine course of the train, with its couple of locomotives puffing up beside yawning precipices, the sight of which had a dizzy effect. We were shown a point where, some years ago, a train had gone off the rails, and been hurled into the abyss below; but were assured by the conductor that such things cannot happen now, owing to increased precautions on exposed parts. The awe and majesty of the passage by rapid transit of the famous route, formerly traversed in diligence, is a thing that lingers in the memory. It is often said that railways destroy all romance in travel; but this can hardly be declared of the railway over the Brenner. The rapid succession of frowning rocks, thundering cascades, smiling farmsteads, with herds of browsing cattle, give an amount of kaleidoscopic slides, which fail to produce satiety in the breast of even the most indifferent or blasé traveller. Yes, the Tyrol is a beautiful land, full of charm and poetry.

We passed Feldkirch, where the line for Franzensfeste and Innsbruck branches off, and continued the journey through Sturia, by Salzburg and Lenz, to Vienna, where we arrived at eight o'clock on Saturday morning, after a journey of 36 hours.

The old Imperial city is one which rarely fails to awaken interest in the breast of the traveller; its magnificent public buildings, palatial residences, and spacious boulevards, or rings, as they are called, leave even Paris behind. It was amusing to note the signs of surprise and admiration on the part of our French companions, who were totally unprepared for anything of the kind. After putting up at an hotel, we drove about to see something of the city. We had the advantage of being piloted by a native, who, like his ancestors, was anxious to conform to the tradition of taking the traveller, setting foot in the Kaiserstadt, to one of the oldest memorials of the city, "Der Stock im Eisen," or Stick in the Iron, which is the site of pilgrimage for new comers. Every traveller, desirous of returning in safety to his home, is careful not to omit this ceremony before proceeding to pay his devotions at the Shrine of St. Stephen, or descending into the vaults of the Capuziner Kirche, the mausoleum of the House of Hapsburg.

Thence we repaired to the Cathedral, where service was going on with all the signs of devotion peculiar to an essentially Catholic country. One felt the difference without being able to account for it

in words. But our quick-witted Parisians soon seized it. "How unlike this is to Notre Dame!" they exclaimed, on seeing the devout worshippers kneeling on the stone floor of the church dedicated to St. Stephen. The loud way in which the responses were chanted, and the prayers recited audibly, was something quite foreign to modern Gallic experience. It is most difficult for a stranger to define the peculiar charm of Vienna; it can be better understood than expressed. One has the sensation of being within hail, so to speak, of the Orient. Recollections of the exhibition year of 1873 crowded through my mind, reviving impressions which had begun to fade. The multifarious and picturesque groups of members of the ten nationalities composing the Austro-Hungarian Empire; the Turks, Greeks, and Armenians, whose nationality might be detected by the garb of the wearer; the numerous signs connecting this ancient city with the past, unite and combine to make Vienna the most interesting of capitals.

It is true that the destructive hand of the reformer has cut sharply into the life of the past, and the Vienna of to-day has little in common with the city of a generation ago.

The old part of the town, forming the inner ring around the Cathedral of St. Stephen, has been subjected to the destroying pick-axe, and the old "Graben," where the city walls still existed at the formation of the Dual Monarchy, 30 years ago, lingers only as a nominal landmark.

The great scheme of regulating the course of the Danube has also made a sweeping change in the landscape. The "Turken-Schauze," which constituted a favourite stroll for the citizens, has been obliterated, and the only existing memorial of the siege of Vienna by the Turks in 1689, has had to make way for the modern villa.

But the "Prater" still flourishes in all its splendour, and the surrounding hills, the Leopold and Kahlemborg, cannot be encroached upon by the hand of time.

After the two nights in the train, our party were glad to retire early, as "rendez-vous" was given next morning, at half-past five, to embark on the steamer for Buda-Pesth.

The place of embarkation was the canal of the Danube, and passengers had to sail for half an hour between the monotonous banks before being transhipped to the large steamer lying in mid-stream.

The company consisted of members of the forthcoming Congress, largely reinforced by the contingent of delegates from Vienna, along with a number of miscellaneous tourists of different nationalities. There was a sprinkling of Americans, rather "high in tone," and "real smart." A solitary man, with a smooth, dark face, might be set down as belonging to a branch of the sporting fraternity and of British nationality. Among the Viennese contingent was a celebrated Latin scholar and antiquarian. This gentleman's acquirements were called into requisition as we passed the site of the old Roman town of Carnemtum.

From the broad bosom of the Danube the only antiquities which can be made out are a castle, of the name of Petronell, with a park. Dr. Zweibrücken was able, by his archæological studies, to conjure up the Roman city which took the place of the modern Vienna. A little further on we passed the Island of Lobau, celebrated for the combats



which Napoleon I. waged there in 1809 while forcing the passage of the Danube.

At this stage most of the passengers descended to the saloon, where a very sumptuous meal was provided at moderate rate. Here we first made acquaintance with the famous "paprika," or Hungarian red pepper, which forms such a constant ingredient in the spicy repasts of the subjects of the Dual Monarchy. Some of the more delicate French palates rebelled at this fiery condiment, but others appeared to take to it very kindly. Already they had made the discovery that good living was to be found beyond the range of the boulevards.

On regaining the upper deck, we found the boat nearing the confines of the extreme western spurs of the Carpathians, and the narrow passage which the Danube cuts between the so-called mountains and the summits of the Leitha, takes the name of the *Porta-Hungarica*. About this point the frontier between Austria and Hungary is reached, and we run up the Hungarian colours which our French friends are proud to salute as their own. Our entry into the country was marked by a great display of diverse and picturesque costumes. The peasants were in their Sunday best, and exhibited a great variety of colours in their attire, most pleasing to the eye, especially to the traveller on a bright summer's morning.

Our captain was very much exercised in marshalling his new passengers, and at the last moment some were nearly left behind, having only secured a place by a flying leap. Our band struck up the Magyar National Anthem, and we sailed majestically on our course down towards the fertile plains of Hungary, which then were nearly ripe for harvest. Numbers of floating mills beside the stream indicated that we had come into the corn country, where the finest wheat is grown to supply the tables of Vienna and Paris, with the light rolls so widely appreciated.

We called at Presbourg, the former capital of Hungary, where the kings of that country were crowned and the Parliament sat until 1848. There is a Cathedral and a Castle, inhabited formerly by Maria Theresa, but abandoned in 1802, and subsequently converted into a barracks. The Danube is here crossed by a bridge of boats, and the Presbourgians have the enjoyment of a miniature Prater on an island called the Aull. The next place of interest we noted was Komorn (in Hungarian Komárom). This little town of 13,000 inhabitants had played a conspicuous part in the insurrection of 1848-9. One of our press companions told us this was his native place, where his father had taken a prominent part in the rising against the Austrian tyrants. Although of German name, and speaking that language like a native, all our colleagues' sympathies were with the Magyars. We here began to realise the meaning of the nationality question in the Austro-Hungarian Empire, that terrible bone of contention which many people believe will at no distant day rend the dominions of the House of Hapsburg in pieces. "The morrow of the day when the Emperor Francis Joseph dies, war will break out," said an experienced student of Eastern Europe.

There was something in the surroundings to excite the imagination; the broad river steadily bearing us eastwards; the views of minarets and cupolas; the grand captain with his cocked hat, gold-tasseled

epaulettes, and long sword; and the heterogeneous travellers on board the ship. It was a land of colour on which we were entering, where passions raged stronger than in the more tranquil West. Perhaps the most striking-looking place we had yet passed was the town of Gran, alias Esztergom, where there is a grand palatial residence of the Primates of Hungary. This is one of the most ancient cities of the country, and has a commanding situation, though boasting only some 15,000 inhabitants.

"Ah! ya!" said a modern-minded man at my elbow, "very fine and picturesque, certainly; but no trade, little business doing; just look at this splendid river on which we are sailing; did you ever see such a deserted water-course? How many craft have we passed since leaving Vienna?" In effect, whenever a vessel was sighted, almost as much fuss was made as if we had been saluting a man-of-war. One of the crew kept waving a huge paddle in the direction which the advancing vessel was thereby instructed to take. This was continued until the two boats were abreast of each other, and had a most laughable effect. "Assez, assez," exclaimed some of the French passengers, but the officers of the Royal Mail steamer, on which we were, seemed to consider the antediluvian procedure the most natural in the world. "To avoid accidents" was the explanation, as if the rule of the road depended only on such clumsy regulations. But each country has its own way of doing things.

After about a twelve hours' sail, between five and six in the evening, we caught sight of the real capital of Hungary, Budapest. The approaches to the city were enlivened by the presence, on the broad waters of the Danube, of numerous steamers and other boats, gaily decked with flags, and sounds of music made themselves heard. The cause we soon learned; the Emperor Francis Joseph was returning from Pesth to his palace at Buda, the modern half of the dual capital, situated on the north bank of the river. By the aid of glasses we could distinctly make out the form, and even the features, of the venerable Sovereign. Francis Joseph still holds himself as erect as in the days of his youth, when, on succeeding to the throne at the early age of 18, he charmed all beholders by his elegant appearance. He has grown grey, but in other respects shows few signs of the many and grievous trials through which he has passed. We saw him step jauntily out of his steam yacht, and into the carriage and pair which drove him rapidly off in the direction of the palace.

We were landed on the opposite side, and were received by a deputation of the Hungarian Press Club, who greeted us in princely fashion.

I was conducted in an open conveyance to an hotel, where a room had been taken for me. Happening to remark to my attendant that we had just seen the Emperor, a frown flitted over the face of the confrère. "The King, you mean," he said with some severity; "here, we know no Emperor." Ah! I see; but it takes a little while to know the ropes. After being provided with a chamber in the Hotel National, in the Andrássy Ut, i.e., street, I was informed that we delegates were invited to a punch at the Otthon Club.

On repairing thither, which was only a matter of some two minutes' walk along the same street, we found a large company assembled, who

did the honours for us in a most graceful and hospitable style. The so-called punch resolved itself into a champagne supper, with all the delicacies for which the Hungarian kitchen is famous. One has heard something of the hospitality of Hungary, but we were not prepared to experience such lavish tokens of it immediately after setting foot on her soil.

The gaiety was free, and even boisterous, the ladies of our party being not backward in their appreciation of the good things provided. How many bumpers were filled and emptied would not be easy to recall; and certainly the Otthon Club omitted nothing to prove the sincerity of our welcome. The company did not separate till close on midnight.

Next morning we were due at the Rath Haus, or Town Hall, for the opening of the Press Congress, at nine o'clock. This was a sort of full-dress rehearsal, in which show played a principal part. It was indeed a very grand ceremony.

The room wherein we met is horse-shoe in form, with rows of seats rising in an amphitheatre. Each member of the Congress had his own seat and desk assigned him, and at ten o'clock the sitting was formally opened by the Hungarian Minister of Commerce, who delivered an address of welcome. He was succeeded by Dr. William Singer, editor of the *Wiener Tagblatt*, who likewise delivered himself in the language of the Magyars, apparently with great facility. He afterwards repeated his remarks in German, and obtained much applause. The rest of the proceedings on the first day were of a similar formal character, and the session rose about eleven o'clock, after an appointment had been given to meet in the Exhibition grounds at 2 p.m., for the banquet to be given by the municipality to the members of the Congress.

We repaired to our hotels, where the question of dress, or no dress, was discussed with considerable interest.

Luckily dress "de rigueur" was rejected by a large majority, for it was a broiling hot day, when the lightest of overcoats would have been "de trop"; and an Englishman has difficulty in divesting himself from a sense of the ridiculous in appearing in public at noontime in evening dress. This was our first introduction to the Exhibition, which had a very attractive aspect with its fairy-like palaces, lakes, and gardens. The banquet was held in a large hall, capable of containing several thousand people.

There were five long tables, besides the reserved *daïs*, for distinguished guests. The bill of fare comprised not only all the familiar products of the kitchen, but a variety of choice dishes, which rarely come in the way of the inhabitants of Western Europe. The wines included a tokay, said to be 100 years old, which had a very rare bouquet, and was highly appreciated by the connoisseurs present. After coffee was served, cigars and cigarettes were lit; my *vis-à-vis*, a pretty young English lady, following the fashion, when the usual amount of make-believe refusal to do such an improper thing had been got over. The speeches delivered were not honoured with much attention, at any rate by the strangers unacquainted with the language. They were understood to be of the usual complimentary character, and they went down very well with the help of the old tokay, of which a fresh supply was served for the occasion.



Of celebrities present we were shown Francis Kossuth, son of the Hungarian patriot, and Maurice Jokai, the well-known poet and novelist.

After sitting for over two hours, the company separated to stroll about the Exhibition, or otherwise divert themselves. My neighbour, a municipal councillor, was kind enough to place his carriage at our disposal, to drive about in the fashionable promenade. Here we were shown the notabilities of the town, and had a gracious bow from the prima donna of the Opera House. We were taken to a Panorama, commemorating a Hungarian victory over the Turks, a brilliant and life-like representation of a battle field. Our host, the town councillor, gave us a sketch of the politics of the place.

A year ago, Hungarians and Austrians were glaring at each other across the Leitha, like the proverbial *chiens de Faience*. Vienna was boycotting Budapest, pretending to ignore the Exhibition, and calling out for a reduction in the *pro rata* taxation contributed by the Austrian portion of the Monarchy. Budapest, being the better off, could afford to be generous, but spoke of the retrograde Austrians with a sort of pitying patronage—"Far behind, very far behind, those good Westerlings." But our host for the time being, like a true man of business, deplored these unprofitable wrangles, and remarked with justice, "These things interfere with business; it is far better to go hand in hand; co-operation, rather than competition, is the order of the day." This gentleman also found time to tell us the real story of the death of the Crown Prince Rudolph, which differs considerably from the received official version. But the truth of this tragic incident need not here be repeated.

The evening was spent in being personally conducted from one show to another in the Exhibition. My recollection of these entertainments is, that of a succession of music and dancing and dramatic performances, with a strong dash of local colour thrown in for the occasion. We were taken outside to a separate minor Exhibition, called *Ős Budavára*, where Old Buda, under the Turkish domination, was depicted.

Next day, the real work of the Congress began by the discussion of the business on the notice paper. This time there was no august ceremonial, and no guard of honour, and the proceedings commenced in earnest. Considering we were an international assembly, composed of about as many countries as there are races in the Austro-Hungarian Empire, the programme was carried out with 'all due decorum, and in very fair parliamentary fashion.

By noon, on the third day, the business of the Congress was concluded, with the convenient rider, which adjourned some of the troublesome questions to the Congress of 1897, fixed to be held at Stockholm.

The remainder of the week was spent in excursions and visits to the Exhibition. The environs of Budapest are very picturesque, and replete with historical associations connected with the sojourn of the Turks. An excursion was arranged by the Municipality to an island, a little way up the Danube, where the Archduke Rainer has a residence, and dispenses his abundant wealth in works of charity. There is a large water cure Sanitorium, in which sulphur forms a too

prominent ingredient for sensitive nostrils; but in honour of our visit, young women were provided with baskets of roses, which masked the mineral odours.

The excursion wound up with a display of fireworks from the Buda bank of the river, and the serving of a floating picnic, in which the distribution of liquors was so abundant as to procure the title of *das besoffen Schiff*! But we did not heel over, or otherwise justify the title beyond a certain amount of not unseemly gaiety. Next day most of us dedicated to the Exhibition, and the general conclusion was that this millennial commemoration of Hungarian nationality was one of the most interesting of its kind. The surprise and pleasure of the French visitors, on beholding so many evidences of taste and elegance of construction, not second to their own, was very great.

The only drawback was that so many of the buildings could only be identified after examination of contents, the names in the Magyar tongue affording no clue thereto. But it was a treat to wander about in pavilions, full of rare specimens of forestry, rich costumes of out-of-the-way corners of the Monarchy, such as Ruthenia and the Slavonic Provinces. The fishery exhibits were singularly comprehensive and instructive, as were many of the minor industries of the country. The art department was also a surprise to many of us; but, perhaps, where Austrian progress was most remarkable was in the section devoted to Bosnia and Herzegovina, which peaceful acquisition forms one of the proudest items to the credit of the Austro-Hungarian State. I engaged in conversation with a nice-looking young Mussulman girl, who spoke a very pretty German of her own, and gave a most favourable account of the good work which the Government of the Emperor (King) had performed in those provinces, which, until 1877, had been the scene of so many cruel conflicts and unjust oppression. In this miniature corner of the East, one had abundant evidence that the Turk could be improved, and could improve his condition when in the enjoyment and under the protection of good laws. The sounds of singing and music were heard at every corner of the Exhibition, for here we were in the country of born musicians, the Czigányok forming the great majority. Never had I conceived that such a wealth of melody and wild weirdness of execution could be met with in so many of these swarthy gipsy players, whose musical attainments are a natural gift, without the aid of a teacher. One can sit by the hour and drink in these streams of rich melody, dashed with a vein of deep melancholy. The singing of the numerous choral associations in these open-air concerts was another feature of the life of the city. I remember the performance of a school of boys, who sang their wild and pathetic native airs with the finish of trained artists. As I have already stated, the authorities of the Hungarian capital were very lavish in their attentions to their foreign guests. Not only had we the free run of the Exhibition, but we were also invited to a State performance, at the Royal Opera, and to a reception at the Minister for Foreign Affairs, Baron Bánfy. The former was a very brilliant spectacle, the performance being a *chef d'œuvre* of one of the great national composers. Between the acts, we were taken through the green-room, and served with champagne. It is astonishing what an amount of liquor they consume in Hungary.

The President of the Institute of Journalists, Sir Hugh Gilzean Reid, and his handsome daughter, were received with special honours; and M. Launay, the Secretary of the French Delegation, was likewise made the subject of flattering attentions. In Pesth the theatres follow the good custom of finishing the performance at ten o'clock, instead of letting it drag on till midnight, as in Paris. After the theatre, all the world goes to sup, and a very good supper they make, to judge from the lengthy and enticing bill of fare presented at the restaurants. Here, again, music meets you at every turn, and you go to rest with the strains of the wild Czigányok echoing in your slumbers.

The reception at the Hungarian Premier's was the crowning festivity of our stay, but the pleasure was sadly marred, and our meeting precipitately wound up by an accident on the hydraulic lift, whereby two of our colleagues were fatally hurt, and two others severely shaken.

**Simplon Tunnel.**—The construction of the Simplon tunnel was commenced on August 1st. The tunnel will have a single track, and will be 21,580 yards (about 12½ miles) long, while the Mont Cenis is 13,503, and the St. Gothard 16,387. At a later date a second tunnel will be constructed parallel to the first, and at a distance of 19 yards from it. The northern entrance to the tunnel will be 2,700 yards from the present station of Brieg at an elevation of 2,254 feet; the exit on the Italian side will be 800 yards from Isella.—*Revue Française.*

**Pitcairn Island.**—This island in the southern seas is well known as the resort of the mutineers of the *Bounty* in 1790. It is about two miles long from east to west, and about one broad. It has no coral reef like the other neighbouring islands. The cliffs, clothed with luxuriant vegetation, rise straight from the sea in picturesque outlines. The landing-places, of which Bounty Bay on the north coast is the one most generally used, are difficult of approach and constantly lashed by surf. Adams-town and its plantations are situated on a plateau overlooking Bounty Bay from a height of 430 feet. To the south the plain gradually rises to the foot of the steep chain which traverses the island from east to west and falls precipitously to the south coast. This ridge of dark, basaltic lava culminates in two points at the east and west, the highest, Lookout Ridge, attaining to 1,108 feet. The soil is fruitful, and coco-palms and bread-fruit trees were introduced by the settlers. Brooks and springs are scarce, and rainwater has to be used for drinking.

In 1856 part of the population was transferred to Norfolk Island; the remainder have now increased to 141. Fair and blue-eyed persons are common, though they are descendants of Tahitian women. The administration consists of a president and a parliament of five members elected annually by the women as well as the men. The president's house contains an organ, given by the Queen, of which the islanders are very proud. The other public building is the parliament house, which also serves as a church and school. There was no minister till 1896, the grown-up men conducting the service in turn. About once a year a British man-of-war brings them clothing and luxuries, and then, if necessary, judicial cases are disposed of, but serious crime is very rare. When a murder was committed in 1897, the judge of the Fiji Islands had to make a voyage to Pitcairn Island to try the criminal. Alcoholic drinks and tobacco are forbidden.—*Globus*, vol. lxxv, No. 5.

The community is not as innocent and happy as might be supposed. In recent correspondence published by the Colonial Office the people are described in the following terms: "Lax in morals, weak in intellect, they are fast degenerating, and unless something is speedily done to alter their condition they will probably drift into hopeless imbecility." Living in almost complete isolation, and procuring food with little trouble, they have no incentive to exercise their mental and physical powers.

—*Scottish Geographical Magazine.*

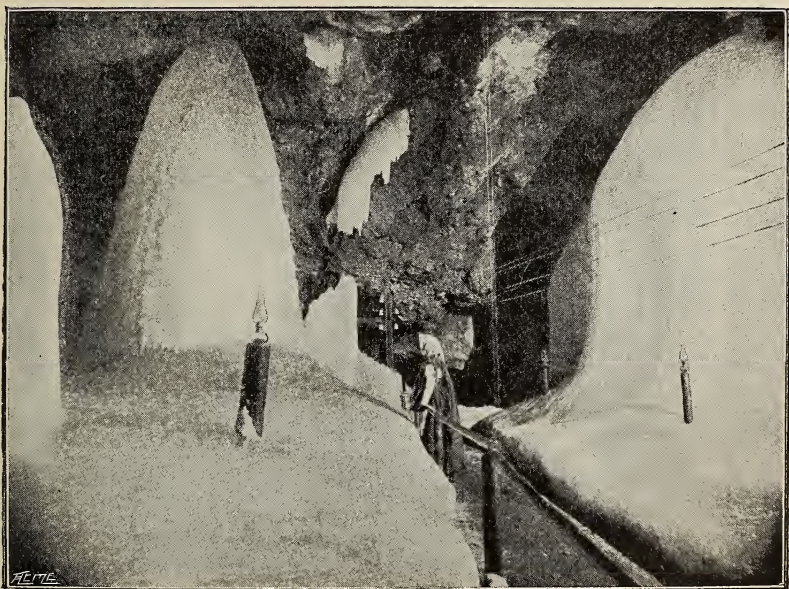


## VISIT TO THE TATRA.

By MR. J. B. LATHAM, of Paris.

[Addressed to the Society in the Library, Monday, Dec. 6th, 1897.]

PART of the programme of the Congress of Journalists, which met at Budapest, consisted in excursions, and members were given the choice of joining a personally-conducted party down the Danube to Belgrade and the Turkish frontier to Transylvania, or the Carpathians of the Upper Tatra. My colleague



LESSER HALL WATERFALLS.

from Paris, who was not very fond of climbing, preferred the river route. I chose the Hungarian Highlands, having always had a hanker- ing after the mountains. As the hero, in "Miss Helyett" says, *Je suis l'homme de la montagne*, accordingly I entered my name for the Hohe Tatra group, which, by arrangements with our friends of the Otthon Club, was fixed to start at 7-30 a.m. on Sunday.

Arrived at the meeting place at the appointed hour, I looked in vain for any of the gentlemen with the blue and white rosette in their button-hole, but none were to be seen or heard of. As the hour approached for the departure of the train, I hesitated to go on alone. However, having a free pass over all the State railways, it seemed a pity not to make use of it; so at the last moment I jumped in.

Not caring to be burdened with too much luggage, I had left behind, in the hotel, the volume of Hachette's very complete guide to the Danube and the Balkans, so that my knowledge of the itinerary was vague in the extreme. The only name I could recall was that of Dobsina, in the county of Gömör.

What fastened this in my mind was the celebrated ice cave, near that place, which had been discovered in 1870.

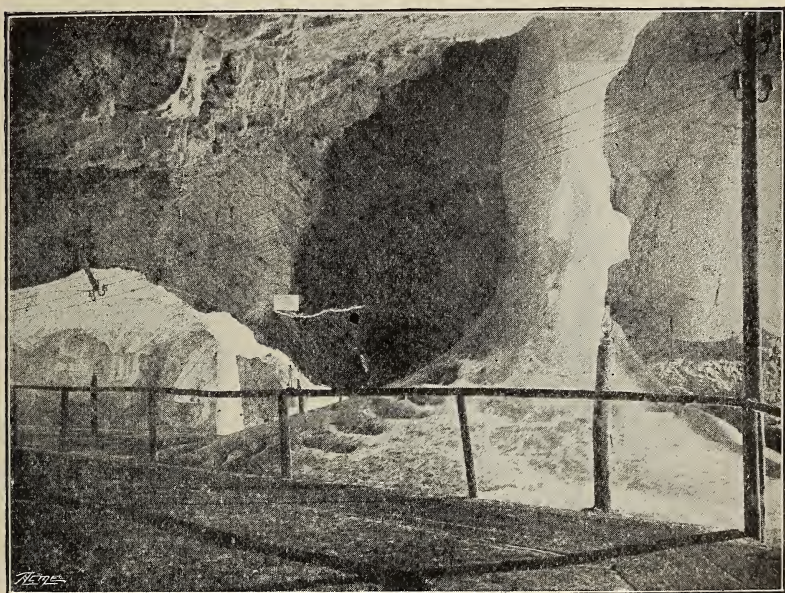
The direction was a little vague, being not very different from inquiring of a guard at Euston for the station to the Falls of Foyers, but in Hungary the guards, who are all conductors, and have the uniform of a military man of rank, have more leisure to attend to a lone traveller than a similar official on the North-Western or Great Northern Railways in England. The advantages of a corridor train made themselves felt at once. Sitting down beside me, the Royal railway official took out his time table, and after identifying the station of Dobsina, he very good-naturedly jotted down the places where I had to change trains. Thus provided, I could not go wrong, and being asked whether I would take breakfast, I was able to make a comfortable meal at leisure, without running the risk of scalding my throat with hot coffee or chocolate, or being left behind as at Mugby Junction.

These extra facilities compensated for the rather slow rate of travelling, which did not exceed much more than twenty miles an hour. But the torpid rate of locomotion was more than compensated by the varied scenes of interest along the route. It being Sunday morning, the peasants appeared at every station in all their rustic finery. I had not seen so much since beholding it in "Don Giovanni" on the boards of Her Majesty's Theatre, except, perhaps, at the National Fêtes at Berne, to celebrate the centennial anniversary of the foundation of the Swiss Confederation. And these Hungarian country folk have a wealth of colour and a picturesqueness of attire all their own, a well-set-up stalwart race, with considerable beauty of features, as well as form. Mr. Meredith's egotistical hero would have felt himself among his people here. After about three hours' jogging along, we turned out at a place—Miskolcz—where a stoppage was announced of a couple of hours. Here everybody took an early dinner at the abundant buffet, so different from the mouldy pork pies and stale cakes with which we are so familiar in another place. After that job was over, I set out to explore the country, and took a pleasant ramble beside a cool stream. Here were children and some grown-up people taking a bath without too much regard for appearances. I began to realise what the German said of Hungarian primitiveness. I found my way into the heart of the little town which, as used to be the case with us, was situated nearly two miles from the railway station. The people were just coming away from church—Protestant as well as Catholic—and they all had a comfortable, well-to-do appearance.

In attempting a circuitous route to return to the station, I nearly lost myself, but a good-natured Slavonic peasant, clad in a long embroidered white petticoat, with a Joseph's vest and jacket above it, kindly volunteered to show me the way, all the while keeping up a voluble conversation, regardless of the fact that I did not understand a word of it.



In the further part of the journey, I had for companion two country gentlemen, one of whom was agent for the Prince of Coburg, who has extensive forests and ironworks in his domains, on the western spur of the Carpathians. The weather had become so oppressively hot, that one was thankful to have the run of the train, and stand out on the platform to breathe a little fresh air. The country became more hilly as we advanced north, and showed a greater diversity than the wide plains through which the Danube forced its solitary way to the East. One breathed the balmy air of the forest and scented the lung-strengthening perfume of the pine trees. Between three and four o'clock we were turned out again at a little place called Baurève, where I had the opportunity of watching Hungarian peasants enjoying



THE OAK TREE, IN THE LESSER HALL.

the Sunday afternoon. The grace and simplicity of these rustics was very remarkable; their musical gifts were certainly very exceptional, being able to render in part their native wood notes wild, expressive of the deepest pathos and tenderest sentiment. These country gatherings are said to be quite common, the peasants driving long distances for that purpose. Neighbours keep open house, and are only too glad to uncork the best bottle in honour of the stranger. Hospitality in Hungary is no vain word, and it would be considered the height of boorishness to let the visitor away without placing all that was best in bed and board at his disposal.

The meadow and marshy land in this country appears to be utilised for cattle and horses; they have a curious system of letting the foals run after the farmer's cart unattached, sometimes a good bit in the



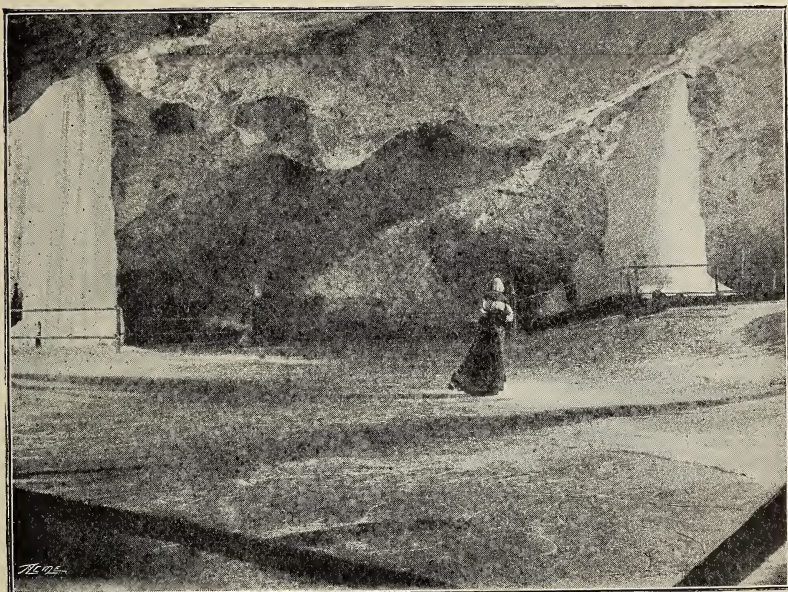
rear, but they never drop behind altogether. The rank growing substance, cantharides, is also a staple product here. From this stage the railway took us by slow serpentine stages into the heart of the Hungarian Highlands, and the temperature fell very considerably. By the time we reached Dobsina, 10-20 p.m., the night was as fresh as it might have been in the Highlands of Scotland. I found my way to the little inn, and had a room assigned me that might have accommodated a whole guard, with two small beds, facing each other, and a miniature basin, not forgetting the Joseph's-coat counterpane of many colours. In these remote regions the traveller seems to be promoted in his own esteem, as well as in that of his hosts. He becomes your grace (*Eure Gnaden*) and begins to wonder whether he will not be canonised next. Your Grace was asked whether he had eat well, and the hope was expressed that he would sleep well. The sheets smelt of lavender and other herbs, and the Bett decke (coverlet) was of a flaming red hue.

Early in the morning I turned out, and found the country people engaged at market, where a brisk chaffering was kept up over the staple commodities of the district. I noted with surprise that nearly all these people were speaking in German, or a dialect of the High Dutch. How was this? We were still in Hungary. The mystery was solved when I was invited by a native to go with him to the Town Hall, to be introduced to the Mayor and Corporation. This was a rather formidable affair, but to have shirked the honour might have given offence. Accordingly, a series of presentations took place between "your grace" and the civic dignitaries. The Burgomaster, with an obliging air, pointed out the arms of the town of Dobschau. These were a countryman looking into a pot, which armorial bearing gives a clue to the German origin of the place. He added, by way of explanation of the prevalence of a Germanic element among the population of this small burgh in Hungary, that many of these people were descendants of North Germans, who had settled in that remote corner of the Empire about the middle of last century, under the protection of the Empress Maria Theresa, after the Seven Years' War, and the conquest of Silesia by Frederick the Great, German and Hungarian formed a sort of common dual language like French and German at Neufchatel.

The municipal authorities vied with one another in supplying me with information about the country, and the way to proceed to the Tatra. The only way of journeying was by carriage, over a hilly, wooded country, forming the lower declivity of the range of the Carpathians. Roughly speaking, it might be compared to the highlands in Perthshire, only of a wilder and more desolate character. I could engage a conveyance for about 10 florins, which, with the driver's fee, came to about a sovereign. This would take me to the station of Tatra-Füred, about three miles from the baths of Schnecks. I was advised to start early, and to allow time for the visit to the celebrated ice cave, which was about half-way. However, on the possibility of a belated appearance of some of our friends from Budapest, I waited until the train arrived from that city before setting out on my expedition. Nobody appearing, I engaged my vehicle, with the help of the landlord, and made my bargain, no doubt having to pay extra

for the title of Grace accorded me. I was not long in finding out that the old notion of a travelling Englishman being a rolling Croesus still prevailed in these parts, a notion agreeable to the feelings, but not so convenient for the pockets when these do not happen to be lined with gold.

I took leave of the worthy host of the solitary inn at Dobsina, who stood, hat in hand, and gave me a princely send-off. The conveyance was a four-wheeled, four-placed open carriage, with a hood, drawn by two horses. The harness was a little primitive, being patched up here and there with ropes. The driver seemed a sociable man, and had much to remark as we wound slowly up the steep zig-zag road.



GRAND HALL, ICE RINK.

I would not say with Heine, about the town of Gottingen, that it pleased him best when he looked at it from behind. But the view of Dobsina, or Dobschau, gained certainly as we turned our backs to it. After about half an hour's slow march the aspect of the place seemed to improve at every turn of the serpentine track; now and again we met shaggy-haired sheepskin-clothed peasants, with whom the driver exchanged incomprehensible greetings. These wild men of the woods were generally coming down from the mountains with long logs of timber drawn by bullocks.

They were Poles and Ruthenians, many of them Jews, with stiff corkscrew curls, which do not enhance the beauty or dignity of their countenances. After taking a farewell glance at the home of the man with the pot, we plunged into the forest—a beautiful forest, with tall



and stately trees, and sweet flowers wafting a delicious perfume. We were still in the middle of summer, in the enjoyment of splendid weather, and bound for an unknown country, which is no small part in the relish of such excursions. The novelty of the country was forcibly brought home at different stages of the route by the appearance of bands of gipsies. These Egyptians answered better to one's romantic conception than the exported article one meets with at odd times in the bye-ways of England and Scotland. They are intensely oriental, of a more swarthy complexion, and more primitive manners. Clothing for the children of either sex, under nine or ten years, seems more or less a negligible quantity. These young folks do not allow themselves to be affected by considerations of modesty. In a drawing-room, decorum would not be accounted their strongest point; when seen dancing the Csárdás or Hungarian national dance, the transports of these young people were puerile, and their disorder ridiculous, to quote the language of the *Saturday Review* of the good old time, about a French novel of the advanced type. "A lazy, worthless set of creatures," the driver called them, adding that the Government was preparing to keep them in order better than formerly. Tourists in quest of sensations had better make a note of this. After passing through the valley of the Gollnitz, in the course of which the road leads through so narrow a passage between rocky mounds on one side and a deep brook on the other, as to make it difficult for two vehicles to pass each other, the road leads through a high gorge. This is called the Falkengrepp, in which a so-called intermittent fountain is situated, the fountain of Stracena, which sends forth an enormous quantity of water for about an hour and a half, every two or three hours. Perhaps, on account of the dry season, I failed to observe the phenomenon. This gorge opens out into a table-land of fields, covered with flowers, beyond which rises the Rabenstein. From the summit of this mountain, about three thousand seven hundred feet high, there is said to be a magnificent panorama, extending over the snow range of the Tatra. Further on, you pass under a tunnel, the Fort Stracena. At this point the valley shrinks considerably; the rocks accumulate one upon the other. One of these strange masses resembles a stronghold, to which is given the name of the Chateau de Stracena. The road has been made across these blocks, after which you emerge into an open space until you reach the famous Ice Cave of Dobsina.

This marvel of nature was only discovered in 1870, by an engineer of the place, whom I had met in company with the Mayor. This gentleman gave me a description of this beautiful grotto, which he had discovered by accident. The attention of the engineer had been called to the fact that the temperature outside a certain opening in the rocks was considerably lower than that of the neighbourhood. This peculiarity put him on the scent, which he followed up, eventually with complete success. The inner extent of the grotto is 8,874 square metres, and the mass of ice which it contains is estimated at 125,000 cubic metres, representing a weight of 1,000,000 tons. This ice is in certain places liquid, and transparent, like crystal. In other places, whitened by the chalky deposits mingling there, it takes the translucency of the opal, or the opaque and dazzling whiteness of alabaster. The entrance to the grotto is by an opening of scarcely more than six



feet wide; thence you penetrate into a corridor, where there is a descent of 18 steps by a wooden staircase. At the end of this corridor a surprise awaits you in a chamber 390 feet long, from 100 to 200 feet wide, and 32 feet high. Here the ground, the hills, and the ceiling have, through congealing, assumed the most surprising forms. In the middle of the so-called Salle de Glace is a magnificent ice cascade, at the foot of which lies an enormous mass of congealed matter, named after its shape, the head of an elephant, owing to a fancied resemblance to that animal. The numerous stalagmites, stalactites, columns, mounds of ice, and countless facets, the rays of light of which, transmitted in rainbow tints, give the illusion of being in a diamond place; but the crowning sight, which constitutes the great attraction of the



GRAND ICE HALL, VIEW FROM THE LESSER HALL.

grotto, is the so-called ice tree. This is situated in an immense corridor, formed on one side by a wall of rock, and on the other by that of ice, and is divided into two parts by an ice tunnel. No description can give an adequate idea of the lightness of the foliage, the delicacy of the palms, or the richness of form of these flowers, to which the light, dancing with a thousand glittering shades, gives the appearance of life, on which drops of dew and limpid pearls play like rock crystal. The tree of ice measures  $19\frac{1}{2}$  feet high and  $4\frac{3}{4}$  wide. Beyond the tunnel, 26 feet long, hewn out of the purest ice, is situated the so-called chapel, an ogival vessel, of which the sides are partly composed of rock and partly of ice, meeting at the top in an arch of great boldness. To make the structure complete, there is an abyss,

where enormous blocks are piled up and in which water flows, issuing from the melting of the ice. This is called "Enfer"—Hades.

Having started rather late in the day, I was not able to give this marvellous freak of nature the complete attention it deserved, although provided with a special introduction from the engineer who had first brought it to light. A minor matter it appeared somewhat, with my appreciation of the enchanted subterranean palace, was that I had omitted to notice the recommendation of the guide book about bringing additional clothing, to put on during the passage through the ice vaults. Consequently the sharp transition from a temperature of perhaps 70 to 80 degrees Fahr. outside to one of 2 or 3 degrees below freezing point, was more than could be called conducive to comfort. In fact, it just took the edge off the pleasure. But no one ought to regret, at any rate in retrospect, having had the opportunity of seeing the ice cave of Dobsina, even in a state of discomfort. After leaving the grotto, and partaking of a good dinner at the hotel, where some tourists, principally loud-speaking Germans, formed the majority, I set off in the carriage in a westerly direction, remounting the valley of the Gollnitz, as far as the junction of the route between Tiszolch to Poprád, where we arrived some time after six o'clock. After passing through the mountain range of the Ropova (1,056 metres), just before reaching the destination, we obtained a view of the summits of the Carpathians, the snow-capped peaks of which stood out finely in the light of the western sun. "There you see the Hohe Tátra," said the driver with an accent of joyful pride. The bold and jagged peaks looked somewhat formidable for scaling, but I promised myself that treat if circumstances permitted. In the meantime, I was not sorry to find comfortable quarters at a little place on the railway.

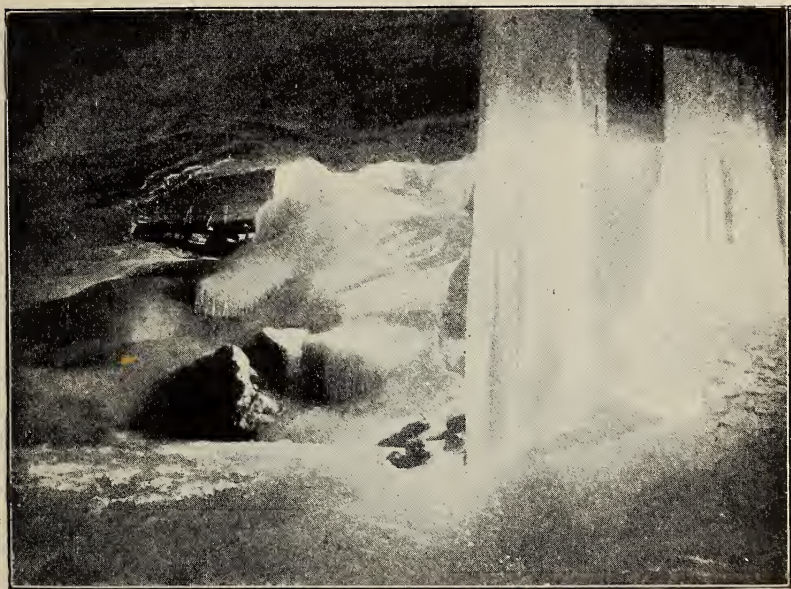
The station of Poprád-Felka lies at the foot of the Tátra range of the eastern Carpathians, about ten miles distant. The landlord of the Railway Hotel provided an excellent supper, in which the national ingredient of paprika, or Hungarian red pepper, was as usual rather too conspicuous. As the German proverb puts it, this condiment is a good thing for a man to ride on horseback with, but it gives a woman a bad temper. I inquired of a native whether they gave this fiery whet to the appetite to children. "Oh! yes, almost from their cradles; they are accustomed to it," was the answer. After that I was not surprised to find the Hungarians, with all their charming and engaging qualities, rather a peppery people.

After a good night's rest, I started for Bad Schmecks, to give Tátra Füred its German name. The morning air, fresh from the mountains, was delightfully exhilarating, and I was thankful that I had left the Hungarian Johannesburg, or "Jada" Pest, behind. A north wind was blowing in our faces, and the fragrance from the rich fields of wild flowers, ranunculus and iris, etc., made one inhale it with sheer delight—*reiner Wollust*, as the Germans say. This watering place of the Tátra I found was divided into three compartments, so to speak, old Schmecks, new Schmecks, and middle Schmecks. I was directed to between the two, viz., at Unter Schmecks. The baths here are reputed to be amongst the most famous of Northern Hungary, having been used since the last century, 1707. Everywhere the hand of the modern builder, though not of the objectionable jerry type, was



visible. The favourite construction seemed to be the Swiss *châlet*, but of more solid description than one sees in the Alps. My object in going to the Tatra was not, however, to take baths, but to see something of the Hungarian Switzerland, whose beauties had been revealed to me by that valiant explorer and industrious recorder, M. Leon Rousset, foreign editor of the Parisian publishers, Hachette and Company.

On announcing my intention, the porter of the house attached to the bathing establishment undertook to provide me with a guide. In about a quarter of an hour my guide appeared, a dapper little man of the name of Johann Franz, 31 years old, as he subsequently informed me. To my question about a possible ascent of one of the peaks



RIGHT CORRIDOR, HELL.

overhead, Franz expressed his readiness to start at once; but I could see by the way he eyed me that he was a little doubtful as to his fitness to attack one of these Dolomites. We were not long in getting under way, after a brief consultation as to the most suitable clothing to take, which consisted in the lightest materials of my pack, with a change of flannels and hob-nailed boots; also great coat. As it was getting on in the forenoon, the guide said we should have to pass the night in what he called a hut—the “*Rainer Hütte*.” “Be it so, my friend, I am in your hands; I have not the least idea of what the journey will be like.” So off we started, armed with Hungarian alpenstocks, not quite up to the approved standard of Zermatt or Grindelwald.



We were accompanied by the wishes of the few bathers, who were taking their morning walk in the pine forest. "Whither bound, good sir?" The good Franz took it on himself to answer, "To the Lomnitzer." "Ach! die Lomnitzer Spitze!" "I hope you may get there and have good luck." An agreeable, gentle ascent of about a couple of hours took us to the so-called hut, which proved to be a modern hotel of substantial construction. We passed a very fine waterfall, and a succession of small cascades, dashing over blocks of granite. Far above us towered the snowy-pointed peaks.

The old Rainer Hütte, transformed into the Hotel Zur Gemse, gave us a good reception. It is situated a little more than 4,350 feet above the sea, as near as possible half the height of the mountain we were to climb.\* Not many tourists were found there—a Hungarian lady and gentleman, and a German Protestant pastor and his family. The landlady and her attendants were very hospitable and agreeable, and the food was of a surprisingly varied kind. On looking through the visitors' book, I again came upon a solitary English name—this time an acquaintance, too—Alice Lough, of Blyth, Northumberland, September, 1894. What region of the earth is free from the traces of the modern successors of the ancient Romans?

In the afternoon we went out as far as the snow level to find our mountain legs, and get into practice with the alpenstock. I could see the good Franz begin to feel assured as to his customer. The excursion ended for the day at the point called the Five Lakes. It was very wild and solitary; and overhead, above the region of eternal snow, stood out the Lomnitzer Spitze, once reckoned to be the highest point of the Carpathians, but now made to take the second place, after the Gerlsdorf, which is 29 metres higher.

I must own to having experienced a passing qualm on contemplating the giddy height, but I had confidence in my man. It may as well be stated at once that the Lomnitzer is not reputed a dangerous ascent, only a difficult one. Also, I would disclaim all pretension of having attempted anything extraordinary, mountain climbing being merely a matter of wind, patience, and endurance. But it is always a satisfaction to find that one's powers have not given way, and that the enervating influences of city life have not removed the trace of early experiences. We returned to an early supper, and watched the bonfires on the lower slopes of the mountain in honour of the Feast of St. John, 24th June. The *réveille* was given at 3 a.m. *Aujourd'hui c'est la grande bataille*, as some of our ardent Congressists said on the last day of the three days' conference. The *grande bataille* in the Rath House of Pest came to nothing—the fight that failed. Possibly it will be the same with the attack of the Lomnitzer, I said to myself, on looking out at the grey dawn, which is considerably earlier here than in Western Europe. The weather promised to be a fair average day for a mountaineering expedition. We soon left the Five Lakes behind, and then came what Franz called the "Probe Stunde" trial hour. Candidates for the honours of the Lomnitzer, who fail to pass this standard, are "ploughed" ruthlessly. *Sehr gut; Sie halten sich sehr gut*, was the encouraging report of the

---

\* Lomnitzer Spitze given in guide Joanne 2634 metres.

watchful Johann, who had never lost sight of his charge at any moment when a false step might have entailed bruises, and possibly worse injuries. But it was stiff, very stiff; and my interest in the Dolomites seemed to decrease with closer acquaintance. The third hour was perhaps the hardest bit. Here were some nasty turnings, and sharp edges of limestone rock to lay hold of at wide intervals. But the strapping little guide was equal to the occasion, and his instructions were always clearly given, and proved to be practicable. At the only



LEFT CORRIDOR, PERPENDICULAR ICE WALL, 22 TO 33 YARDS HIGH.

two really *mauvais pas* the Hungarian Alpine Club had caused chains to be attached, by which one caught hold to advance a peg higher—a precaution for which I felt sincerely grateful. Taken in itself, this is a stupid amusement, but it is a passion which lays hold of the lover of mountain scenery. The fourth hour, including a halt of about twenty minutes, for a snatch of cold ham and sausage, washed down by some white wine of the country, and a slight pull at the brandy flask, brought us to within measurable distance of the top. During the previous pauses to take breath we had watched a fine

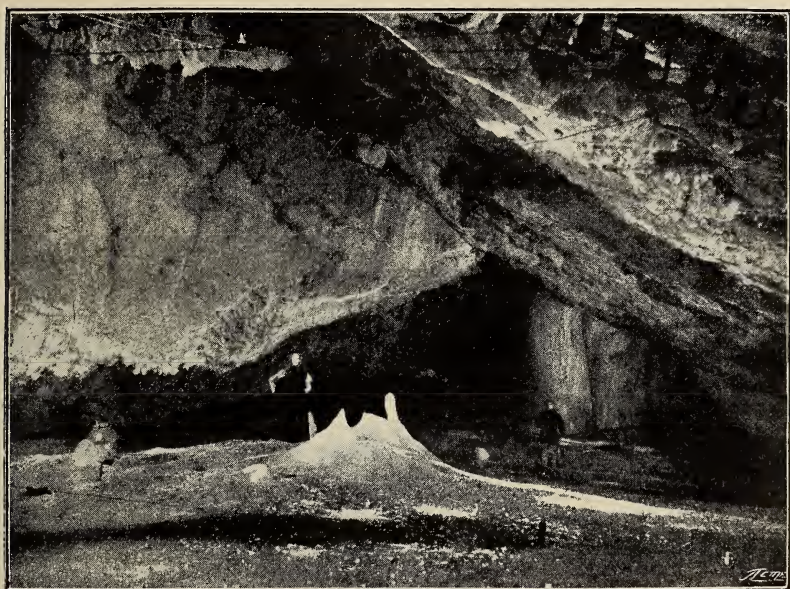
chamois and a couple of young ones retreat from peak to peak as we advanced. The graceful and noble creature stood motionless on several occasions, uttering a plaintive, bleating cry. It would have been easy to pick her off with a carbine at about 150 paces. These wild goats are hunted later in the season, August and September.

Exactly four hours after starting, we touched the pyramid of stones at the summit of the Lomnitzer, and shook hands, shouted *Eljen! Viva Hungaria!* after the fashion of our entertainers of the Otthon Club, at Budapest. Was the result worth the effort? To speak candidly, it was not; or, rather, it might have been considered not worth the fatigue. For the clouds had begun to gather, and a considerable portion of the horizon remained obscure during our stay on the summit, which could only be brief. Still, the panorama was grand; the peaks of the Eisthal, Schlagendorf, and Gerlsdorf stood out quite clearly, encircling us, and looked very awe-inspiring. To the south the range of mountains I had crossed the day before between the Dobsina and Tatra stretched in a long line of dark forest land. Away to the east we only obtained a faint outline of the great plain of Hungary; while, to the north, Galicia was mostly obscured. It enabled one to realise how far we were from familiar countries, to be told that the frontier of Austria and Poland was within a few hours' journey on foot, between Cracow and Lemberg. But the wind was biting, and the cold mist sent a shiver through one's bones. Looking down, the descent seemed almost perpendicular. *Facilis descensus Avern!*

Well, we pulled ourselves together, and buckled to the task, which, as every climber knows, is the more trying part of such an exhibition. The good Johann had provided a rope, with which he deemed it safer to attach his companion for a part of the descent. There was one bit where a tradition has it that a Protestant minister had remained for several hours until further help could be procured him, having been unable either to advance or retire. But I got down without any such adventure, and came off without either a scratch or a bruise. We saw no more of the chamois, who had gone to sleep in some cranny of the rocks; but the shrill cry of the marmots startled the silence of these frozen solitudes. Strange to say, there were no wild birds. There is not much need for the axe in an ascent of the Lomnitzer; but at times it proved useful to cut a short path from one ledge to another in the hard snow and ice. I hailed with satisfaction the sight of the Five Lakes, and the return to the trial part, and was not sorry to leave the sharp stones of these jagged rocks behind, which came sore on the feet. Bears are sometimes met with in the Carpathians, but not often in this part of the chain, or at this time of year. As we approached the zone of vegetation, gentian plants were seen near some struggling, stunted pines. The guide plucked me a quantity, which, he said, made an excellent tonic when steeped in spirits. We reached the Gemse Hotel at 1-15 p.m., having taken 9½ hours, with which Johann expressed himself content. The good fellow accompanied me to the baths of Schmecks, which proved, like their name, a wholesome relish. Once on *terra firma* he related some blood-curdling tales of distressed climbers. In return for the additional "trinkgeld," which the trusty Führer had well deserved, he kissed my hand, after the Hungarian custom.



The ice cave of Dobsina was discovered on 15th July (date of the declaration of the Franco-German War), 1870, by Eugen Ruffinzi, engineer, who was kind enough to make me a present of a pamphlet descriptive of this marvellous freak of nature; as also of the Stracenaer Thal, by Dr. Johann Pelech. In the preface to this treatise, the writer states: "Neither the renowned Adelsberg grotto (in the Semering Pass), the falls of Niagara, the Crater of Vesuvius, nor the most awe-inspiring Alpine solitudes arouse such unexpected sensations as the ice cave of Dobsina. Since it has been opened to the public, it has been visited by more than 48,000 persons. The yearly numbers vary between 2,500 and 2,800, of whom four-sevenths are Hungarians, two-sevenths Germans, and one-seventh people of other nationalities.



CEMETERY.

I am indebted to the Mayor of Dobsina (Mr. Szontágh Béla) for seven cabinet photos and four mounted ditto for camera obscura, as well as for details of the locality. This functionary expresses his best thanks for the friendly interest taken in his country, as also the intention to make it known in England.

My other excursion was to the Czorba See, a mountain lake, which is now accessible to tourists by rail. It is a central point for exploration of the Tatra group, situated 1,350 mètres above the sea level, in face of the snow peaks of the Western Carpathians, where there is excellent accommodation.

I returned to Paris *viâ* Cassa (Kaschau) Pesth, Innsbruck, the Baths of Pfaffers, Zurich, Basle, and Belfort.

## THE CHANGES IN THE POLITICAL MAP OF EUROPE DURING THE NINETEENTH CENTURY, AS ILLUSTRATED BY COPPER COINS.

BY MR. D. F. HOWORTH, F.S.A.S.

[Addressed to the Society in the Library, Tuesday, March 28th, 1899.]

THE maps of all the great divisions of the earth have suffered great changes in the course of the century now so nearly coming to a close; but while in the majority of cases these changes are the result of increased geographical knowledge, due to research and discovery, those in the map of Europe are to be attributed to other causes. For many centuries the whole outline and area of this continent have been well known; the altered mutual relations of its several parts are the changes to be traced. The study of the causes which have been at work to produce these modifications of the map is one of much and varied interest. How far they have been influenced by affinities of race and religion, by efforts to attain greater political freedom, or by the more selfish aims of ambitious men, are all subjects of no little attraction to the student of history. This evening, however, I propose to consider these changes as they may be illustrated by some very humble historical remains—copper coins. Round every coin, however insignificant its value may be, some group of facts may be gathered, to whose truth the coin will give the confirmative evidence of an infallible witness.

The changes in the map, for which numismatic illustrations may be found, are of three kinds, viz.:—(1) The division of large into small independent states; (2) the unification of small autonomous states into one larger; (3) the transfer of territory from one country to another, or to others.

This arrangement excludes from consideration such countries as at present occupy, and have continuously occupied, the same territory during the whole century; and these are few in number. The little Republics of Andorra and San Marino and our own country occupy, I believe, exactly the same areas now as they did one hundred years ago. With some qualifications this may also be said of the kingdoms of Spain and Portugal—they are now in area the same as then; but temporary partial occupations by foreign troops have broken the continuity.

Instead, however, of dividing this paper in any way on the lines suggested by the various kinds of changes already noted, I propose to take the events which claim attention in the order of their occurrence.

When the century opened, 1801, the map of Europe showed very notably the far-reaching effects of the French Revolution, augmented

by the ambitious designs of the first Consul, then at the head of the French Republic. Independent Republics had arisen from the growth of the revolutionary spirit, especially in the countries adjoining France. Some of these had already been absorbed into France itself. The boundaries of the French Republic at this time included the former Austrian Netherlands, or Belgium, and all the territory to the river Rhine; with Piedmontese territory as far as the river Adige. North-east of France was the Batavian Republic, occupying the lands of the Dutch United Provinces; and in the south-east were the Ligurian Republic occupying the Genoese seaboard, and the Cis-alpine Republic, which stretched southwards between the Austro-Venetian territory and the Duchy of Parma. South of this the remainder of the Italian Peninsula was occupied by the Papal States and the kingdom of the Two Sicilies. In Switzerland the Cantonal constitution was for the time overthrown, the Cantons being degraded from the state of autonomy into being the mere departments of the Helvetic Republic, "one and indivisible." Germany, east of the Rhine, was split up into a large number of states, bound together by the almost worn-out ties of the Holy Roman Empire. The nominal head of this Empire was



Fig. 1.—SOLDO OF THE KINGDOM OF ITALY (also 3, 2 and 1 Centesimo, similar).

Obv.—Head of Napoleon to left; NAPOLEONE IMPERATORE E RE and date.

Rev.—The "Iron Crown" of Lombardy; REGNO D'ITALIA, the value and m.m.

Francis I. of Austria; the states themselves acknowledged the rule of every variety of prince, ecclesiastical and secular, and included also many free cities. In addition to being the titular Emperor of Germany, Francis I. was King of Hungary and its associated provinces, and his rule extended over much of the eastern coast of the Adriatic. In the Balkan Peninsula the Ottoman Power was predominant. Apart from the Austrian littoral just mentioned, the only parts free from the Ottoman rule were the little Republic of Ragusa, and the little principality of Montenegro in the west; and the Moldo-Wallachian provinces in the north. The Ionian Islands at this time formed an independent Republic under Russian protection. In the north of Europe the Scandinavian kingdoms of Denmark and Norway with Iceland were under one crown; while the kingdom of Sweden included Finland, thus encircling the whole of the northern Baltic, and a portion of Pomerania, on the South Coast of the Baltic, also acknowledged Swedish rule.

The coins which I have selected to illustrate the opening of the



century are such as were then current, and had been issued by Governments existing at that time, or by monarchs still living and ruling. The inclusion of coins issued by Governments which had very recently terminated would have extended the list considerably; and it is probably quite safe to say that many coins of such countries as the Austrian Netherlands, the kingdom of Poland, the Parthenopean Republic, and others similar, continued long in circulation, though they bore the "image and superscription" of a dead past. The coins shown are those of Great Britain, France, Spain, Portugal, Russia, Sweden, Denmark, the German States (in alphabetical order), Italian States, and Austrian Dominions, etc.

In tracing the changes which were effected from time to time upon the map, we shall generally be more concerned with the treaties which followed the close of hostilities than with the engagements and campaigns of combatant powers. It may be quite safe to affirm that no change has come about without the shedding of human blood; the conference following the sheathing of the sword has, however, determined the bounds of territorial re-arrangements.

During the first decade of the century, change in the map was constant as the result of the career of the first Napoleon. In 1804 he had made himself Emperor of the French, and in the following year King of Italy. In Italy "the greater part of the kingdom of Piedmont, and the States of the Church, the Republic of Genoa, and the Duchies of Lucca, Parma, and Tuscany were incorporated into the French Empire." The "Kingdom of Italy was composed of the Republic of Venice, the Trentino, the Milanese possessions of Austria, the portion of Piedmont lying between the rivers Dora, Balta, and Ticino, together with the Duchy of Modena and the Papal provinces of Romagna and the Marches." For a time a Kingdom of Etruria compensated the late Duke of Parma; and Lucca was converted into a duchy for the Emperor's sister Louise. "The kingdom of Naples was placed first under the rule of Joseph Bonaparte, and then of Murat, the brother-in-law and lieutenant of the French Emperor." As Freeman says: "Thus all Italy, except the island kingdoms of Sardinia and Sicily, was brought under French dominion in one form or another. But of that dominion there were three varieties. The whole western part of the land, from Aosta to Terracina—unless it is worth while to except the new Lucchese Duchy—was formally incorporated with France. The north-eastern side, from Botzen to Ascoli, formed a Kingdom of Italy, distinct from France, but held by the same Sovereign. And this Kingdom of Italy was further increased to the north by part of those Italian lands which had become Swiss and German. Southern Italy, the Kingdom of Naples, remained in form an independent kingdom; but it was held by princes who could not be looked upon as anything but the humble vassals of their mighty kinsman. Never had Italy been brought more completely under foreign dominion. Still, in a part at least of the land, the name of Italy and the shadow of a Kingdom of Italy had been revived. And, as names and shadows are not without influence in human affairs, the mere existence of an Italian State, called by an Italian name, did something. The creation of a sham Italy was no unimportant step towards the creation of a real one."



Fig. 2.—8 MARAVEDI OF JOSEPH BONAPARTE, KING OF SPAIN.

Obv.—Head to left; IOSEPH NAP, D. G. HISP. R. and date, 8-M and m.m.  
Rev.—The arms of Castile and Leon quarterly within a wreath; in centre the French eagle.



Fig. 3.—DOIT OF DUTCH EAST INDIA.

Obv.—Monogram of the letters LN; above, a Star.

Rev.—JAVA and date, between a star and letter Z.



Fig. 4.—2 PFENNING OF JEROME BONAPARTE, KING OF WESTPHALIA (also pf. similar).

Obv.—Monogram of the letters HN and Royal Crown, and m.m.

Rev.—The value and date.



Fig. 5.—3 GRANA OF JOACHIM MURAT, KING OF NAPLES (also 2 similar).

Obv.—Head to left; GIOACCHINO NAP. RE DELLE DUE SIC.

Rev.—Value and date within wreath; PRINCIPE E GRAND'AMMIRAGLIO DI FRANCIA \*



Fig. 6.—3 CENTESIMI OF LUCCA, &c. (also 5 Ctsi. similar).

Obv.—2 Heads to left; FELICE ED ELISA PP. DI LUCCA E PIOMBINO.

Rev.—Value and date in centre, PRINCIPATO DI LUCCA E PIOMBINO.

Meantime, other members of the Emperor's family were elevated to thrones of more or less temporary character. The Batavian Republic became in 1806 the Kingdom of Holland, with Louis Bonaparte, another brother, as king. In 1808 a new Kingdom of Westphalia was created at the expense of Prussia, and given to Jerome Bonaparte. Neufchâtel, which had been an outlying possession of the Prussian house, was given to General Berthier, and Murat received the duchy of Berg until he was transferred to Naples as successor of Joseph Bonaparte. The family gifts and military rewards were accompanied by a total disorganisation of the German Empire, which included the curtailment of Prussia and the establishment of a German Confederation—known as the Confederation of the Rhine—under Napoleon Bonaparte's patronage and supremacy. Alongside this was the temporary resurrection of Polish Independence in the Duchy of Warsaw, and in the free town of Danzig.

For some of the Governments just named no copper coins were issued—Berg and Neufchâtel; the others, however, can be illustrated, but the Kingdom of Holland by Colonial copper coins only.



Fig. 7.—CENT of the NETHERLANDS (also  $\frac{1}{2}$  cent similar).

Obv.—W under a Royal Crown, and between the divided date.

Rev.—Crowned Shield of the royal house between 1 - C.



Fig. 8.—3 CENTESIMI of MARIE LOUISE, PRINCESS of PARMA (also 5 and 1 similar).

Obv.—Crowned Shield of Arms; MARIA LUIGIA ARCHID. D'AUSTRIA and date.

Rev.—Value in centre; DUCHESSA DI PARMA PIACENZA E GUASTALLA.

In 1810 the Kingdom of Holland, and the German lands to the east of it, including Lübeck, were annexed to the Empire of France; and on the east of the Adriatic the Illyrian provinces of the same empire extended to the borders of Bosnia and Montenegro. No copper coinage illustrates this empire except a poorly executed 5 centime piece of 1808; the issues attending the re-organisation of the currency by the late Republic sufficing for the requirements of trade.

The downfall of Napoleon was followed by a reconstitution of the map of Europe, which was marked by many notable changes. The Treaty of Paris, followed by the important Congress of Vienna, did not restore the *status quo ante* in any part of the Continent except in France itself, which was reduced to its limits in 1790. Compensations were claimed and awarded to the Powers who had been in conflict with Napoleon, and transfers of territory made, some of which are still in force, while others have suffered modifications. The following are the principal changes resulting from the Congress: "Belgium and Holland were joined to form the Kingdom of the Netherlands; Norway was separated from Denmark and annexed to the Swedish crown, in consideration of the aid given by the Swedes against Napoleon, though Iceland remained with Denmark; Hanover was restored to George III. of England, with a large slice of Westphalia; Prussia was enlarged



by the addition of part of Saxony, Posen, and much of the left bank of the Rhine; and the old constitution of Switzerland was re-established." In Italy "the statesmen assembled in the Austrian capital determined to restore the royal dynasties of the Peninsula, but not the ancient Republics of Genoa and Venice. The Neapolitan Bourbons were replaced on the throne of Naples, retaining the island of Sicily, in which they had found a refuge under the protection of England's fleet. The country received the name of the Kingdom of the two Sicilies. The Papal authority was restored throughout the former States of the Church. The house of Hapsburg-Lorraine was re-instated in Tuscany. Parma and Modena re-appeared as independent duchies. The King of Piedmont had that country and Savoy restored to him, together with the territory of the old Republic of Genoa. . . . The provinces of Venice and Lombardy, including the fortresses of Verona, Peschiera, Legnano, and Mantua (well known as the quadrilateral) were formed into the Lombardo-Venetian Kingdom, and given to Austria." "The gain of Russia was great. The wide province of Finland, that extended almost from St. Petersburg to the extreme north of the Gulf of Bothnia, was confirmed to her. The Grand Duchy of Warsaw, containing four million inhabitants, and stretching over a space one-half as large again as Ireland, was erected into a kingdom, and annexed to the dominions of the Czar, to be ruled by him as Hungary was ruled by the Emperor of Austria."



Fig. 9.—5 LEPTA OF THE GREEK GOVERNMENT (also 10 and 1 similar).

Obv.—Phoenix, under a Cross; ΠΟΛΙΤΕΙΑ \* \* ΕΛΛΗΝΙΚΗ .αωχα

Rev.—Value within wreath; I. A. ΚΑΠΟΔΙΣΤΡΙΑΣ ΚΤΒΕΡΝΗΤΗΣ and date.

The copper coins which illustrate the changes immediately resulting from this Congress are—(1) those of William of Orange, the first King of the Netherlands; (2) those of Norway, bearing the name of the Swedish monarch; (3) those of the restored monarchies in Italy and elsewhere; (4) those of the Russian Emperor for the Kingdom of Poland, whose autonomy was respected until the people rose in the hope of attaining greater freedom. For Finland, which, as a Grand-duchy, was also to have only the personal attachment to the Czar's throne, no separate copper coinage appeared until 1865. It is now threatened with the loss of those distinctive national characteristics of language, self-government, and currency, whose loss Poland already suffers.

Among nationalities such as people the continent of Europe, there cannot be at any time entire stagnation; but there are recurring periods when greater and more general activity is evinced in the strife

for political freedom. For a very few years after the re-arrangement of Vienna, there was a pause—the desire for peaceful recovery after years of conflict had for a time at least a quietening influence.

In 1820, however, “three movements arose successively in the three southern Peninsulas. In Spain and in Italy a body of soldiers rose on behalf of constitutional government; in Greece a nation rose against the rule of the foreigner.” The interference of the northern powers subdued the risings in Italy and Spain; but those in the Balkan peninsula had long been gaining strength as a conflict between races and religions. Serbia, Greece, and the Roumanian provinces were



Fig. 10.—2 BANI OF ROUMANIA (also 10, 2 and 1 similar).

Obv.—Arms of Roumania, with Supporters, Mantling and Crown. ROMANIA.  
Rev.—Value and date within a wreath.



Fig. 11.—5 PARA OF SERBIA (also 10 and 1 similar).

Obv.—Head to left; OBRENOVITCH III. KNYAZ SRBSKE.  
Rev.—Value and date within a wreath and crown.



Fig. 12.—3 GROSCHEN OF POLISH REVOLUTION.

Obv.—Crowned Shield of Arms of Poland and Lithuania; KROLESTWO POLSKIE.  
Rev.—Within a wreath, 3 GROSZE POLS and date.

persistently fighting for the freedom which was so long denied, until in 1827 Capodistrias was elected President of the Hellenic State; in 1829 Greece was recognised as independent, Serbia as having the right to self-government, and a greater share of autonomy was granted to the Moldo-Wallachian province.

The coins of Capodistrias, as Gubernator (KYBERNHTHΣ) of the Greek polity, are the most interesting of this period—they range from 1828 to 1831.

The end of the one struggle almost introduced the next epoch of the revolutionary movement: that of 1830. In France, the reactionary King Charles X. was driven from the throne, and Louis Philippe, of the Orleans branch of the Bourbons, was chosen to succeed him. The rising was accompanied or followed by movements for constitutional government in Italy, and in some parts of Germany. "The Poles rose to re-assert their independence as a nation. Bravely, obstinately they fought; but, unsupported by foreign help, they were



Fig. 13.—5 CENTIMES OF BELGIUM (also 10, 2 and 1 similar).

Obv.—Crowned L; LEOPOLD PREMIER ROI DES BELGES and date.  
Rev.—Lion sejant regardant, supporting tables; L'UNION FAIT LA FORCE. Value in exergue.



Fig. 14.—10 LEPTA OF GREECE (also 5, 2 and 1 similar).

Obv.—Crowned Shield of Arms; ΒΑΣΙΛΕΙΑ ΤΗΣ ΕΛΛΑΔΟΣ.  
Rev.—Value and date within wreath.



Fig 15.—1 KREUZER, HUNGARY (also 3 similar)

Obv.—Crowned shield of Hungary; MAGYAR KIRÁLYI VALTÓ PENZ.  
Rev.—The value and date.

crushed by the overpowering force of Russia, and their kingdom was declared to be for ever incorporated with the Empire." The recently-erected Kingdom of the Netherlands was also affected at this time, when the differences of language, religion, and temperament between the Dutch and the Flemings led to the disruption of the State, and the elevation of Belgium into a separate kingdom, whose first king was Leopold of Saxe-Coburg.



Copper coins of the new kingdom of Belgium, of the Polish provisional Government before its defeat, and of Greece as a kingdom, illustrate this period.

From 1830 to 1848 nothing happened to alter the map of Europe, with the exception of the disappearance, in 1846, of the Republic of Cracow, "the last surviving fragment of Poland," and its absorption into the Austrian Empire. The year 1848, however, is known as the year of Revolutions. France, Italy, from end to end, Germany,



Fig. 16.—5 CENTESIMI OF VENICE (also 3 and 1 similar).

Obv.—The Lion of St. Mark; GOVERNO PROVVISORIO DI VENEZIA.  
Rev.—Number and date in centre; CENTESIMI \* DE LIRA CORRENTE \*



Fig. 17.—1 BAIOCO OF ROME (also 3 and  $\frac{1}{2}$  similar).

Obv.—Roman Eagle within wreath; DIO E POPOLO.  
Rev.—Value in centre; REPUBBLICA ROMANA, and date.



Fig. 18.—5 CENTESIMI OF TUSCANY (also 2 and 1 similar).

Obv.—Crowned Arms of Savoy; VITTORIO EMANUELE RE ELETTO.  
Rev.—Value and date in centre; GOVERNO DELLA TOSCANA.

Austria, and Hungary were the scenes of revolt and civil war. For a time at least there were Republics established in France, and in some parts of Italy; for a moment Hungary was a free and independent country, and the numismatic evidences of these temporary governments are not the least interesting of European coins. But under more or less altered conditions the countries affected returned to monarchical government, constitutions were granted or revised, but the map remained unaffected.

Another decade passed with no change appearing on the map, although the Crimean War had run its disastrous career. The action of the Kingdom of Sardinia in taking part in the war, and thus securing a locus when the terms of peace came to be settled, brought into prominence the "Re-galantuomo" and the House of Savoy. When therefore the willingness of Victor Emmanuel to take the lead in a movement for the freedom and unification of Italy came to be understood, it was not surprising that means and opportunity for action presented themselves. In 1859 war broke out between Austria and Piedmont, when the latter country received the assistance of French troops, under the leadership of Louis Napoleon, then Emperor of the French. The success of the allies against the Austrians had immediate and subsequent far-reaching effects. The princes of Tuscany, Parma, and Modena, who had hitherto relied upon Austrian support, fled from their respective territories; and the province of Bologna threw off its



Fig. 19.—5 CENTESIMI OF ITALY (also 10, 2 and 1 similar).

Obv.—Head of the King to left; VITTORIO EMANUELE II RE D'ITALIA.  
Rev.—Value and date within a wreath.



Fig. 20.—2 PFENNIG OF GERMANY (also 1 similar).

Obv.—Displayed Eagle, crowned and bearing Shield of Arms of the Empire.  
Rev.—Number in centre; PFENNIG DEUTSCHES REICH and date.

allegiance to the Pope as soon as the Austrian garrison retired. Suddenly, however, the war was terminated by the Peace of Villafranca, as a result of which Lombardy was added to the Piedmontese kingdom. By the votes of the people Tuscany, Modena, Parma, and Romagna were added, and a Kingdom of Italy came within the view of practical politics. Some compensation, however, was asked for by Louis Napoleon, and Victor Emmanuel was obliged to yield up to France the countries of Nice and Savoy, "the glorious cradle of his monarchy."

The coins shown illustrate some of the steps in the establishment of the new kingdom; those of the Tuscan provisional government bear Victor Emmanuel's name as "Re Eletto."

Southern Italy could not long remain passive while freedom and constitutional forms of government were being obtained in the north, and in 1860 risings commenced in the Island of Sicily. The new

kingdom, establishing itself in the north, could not interfere, but General Garibaldi, with a number of volunteers, effected a landing on the island, and very speedily the troops of the Bourbon King were defeated. Then, crossing the straits of Messina to the mainland, the troops, under Garibaldi's leadership, with marvellous success, as speedily gained the continental dominions of the last King of the Two Sicilies, and held them for Victor Emmanuel. After passing with the regular troops through the Papal territories of Umbria and the Marches, which were added to the kingdom, Victor Emmanuel entered Neapolitan territory. In 1861 no part of the Peninsula remained outside the Kingdom of Italy, except the province of Venetia and Rome.

The succession of George, son of the King of Denmark, to the throne of Greece was the occasion for the transfer in 1864 of the Ionian Isles to that kingdom.

In the same year the King of Denmark was compelled to resign all his rights in the duchies of Slesvig-Holstein and Lauenberg, by the combined forces of Austria and Prussia. These two powers soon



Fig. 21.—3 STOTINKI OF BULGARIA (also 10 and 2 similar).

Obv.—The Arms of Bulgaria, with Supporters, Mantling and Crown; \* BULGARIE, &c. \* and motto meaning "Union is strength."

Rev.—Value and date within a wreath.

quarrelled over the administration of the provinces which they had gained, and the opportunity was taken by Bismarck to provoke that conflict between the two states which should settle once for all who was to lead the German peoples. Italy allied itself with Prussia, with the view of securing the addition to its kingdom of that province of Venetia, which the peace of Villafranca had left under Austrian rule. The short, sharp campaign was followed by the peace of Prague, which had not only the anticipated effect in Northern Italy, but resulted in large increases to the Prussian kingdom also. Hanover, Hesse Cassel, Nassau, and the Free City of Frankfort were annexed to Prussia; its leadership was openly acknowledged in all Northern Germany, and by secret alliances Wurtemberg and Baden were bound in certain eventualities to accept its lead.

The coins which illustrate this period are mainly those which mark the last dates of issue by the Governments which ceased to be.

Although Austria came out of this war second best, the effects were not altogether disastrous. Venice was lost, but Hungary was more securely bound to the person of the Emperor by the grant of constitutional forms of government and distinct autonomy. Francis Joseph



was crowned King of Hungary in 1867, and a Hungarian coinage followed.

The aggrandisement of Prussia and the growth of German nationality were viewed by the Emperor of the French with distrust; and this feeling, together with the hope that a successful campaign would make his power more secure, led to his seeking a pretence for war with Prussia. The candidature of a prince of the Hohenzollern house, for the vacant throne of Spain, afforded the excuse, and in 1870 war broke out. The successes of the German armies, which had loyally kept to their arrangements with Prussia, led to the surrender of the French Emperor after the victory at Sedan. Italy, too, had remained in sympathetic alliance with Prussia, so that when results came to be counted, not only were Alsace and Lorraine relegated to Germany, but Rome was transferred on the withdrawal of French troops therefrom, to the kingdom of Italy, completing its present extent. The unification of Italy was thus contemporary with an almost complete unification of Germany and the restoration of the German Empire under the leadership of Prussia.



Fig. 22. — 1 PIASTRE OF CYPRUS (also  $\frac{1}{2}$  and  $\frac{1}{4}$  similar).

Obv.—Diademed head of Queen to left; VICTORIA QUEEN and date.  
Rev.—Figure in centre; CYPRUS. ONE PIASTRE.

The re-establishment of the German Empire has been followed by the unification of its currency, and the provision of one type of coinage for use in all its various states. The change is illustrated here by the last, or nearly last, issues by the several kingdoms of Prussia, Bavaria, Saxony, and Wurtemberg, the principalities of Hesse-Darmstadt, Mecklenberg, Reuss, etc., etc., as well as by the early issues of the new Empire.

Another decade brings within view once again that struggle in South-eastern Europe to cast off the Ottoman yoke—a struggle of which no termination can be anticipated until the Turk returns to the Continent from which he came. In this year Russia interfered, and the success attending the Russian arms compelled the Turks to accept the terms of the San Stephano Treaty, afterwards modified by the Treaty of Berlin. By this Bessarabia was restored to Russia, which had lost it in 1856; Roumania was compensated and declared free, Bulgaria and Eastern Roumelia received some measures of self-government, while Greece, Montenegro, and Servia were enlarged. At the same time, by a separate treaty, Cyprus was conditionally ceded to Great Britain; and Crete was once again handed back to Turkish misrule.

For this period only a few illustrative coins are available, viz., those of Alexander of Bulgaria and of our Queen for Cyprus.

The nearly approaching close of this nineteenth century is marked by no other change to which illustration can thus be given. The autonomy of Crete is of too recent an origin, though its achievement has been an object dear to the islanders for scores of years; but no doubt the issue of a national coinage will be an early result of that autonomy.

In looking over the examples of copper coins illustrating this paper, perhaps the characteristic most likely first to be noticed is the general tendency towards the use of lighter and less cumbrous circulating media. The very first claiming attention are the so-called "cart-wheel" coppers of our own country, including the only issue of so large a value as twopence. The greatly reduced number of varieties now in use is also a remarkable evidence of progress. For example, our own British islands no longer make different types for Irish and Manx use; while in Italy, and to a still greater extent in Germany, the unifying process has extinguished many of the older names and



Fig. 23.—PENNY OF QUEEN VICTORIA (also Halfpenny and Farthing similar).

Obv.—Bust of Queen to left, head crowned and veiled; VICTORIA . DEI . GRA . BRITT . REGINA . FID . DEF . IND . IMP .

Rev.—Figure of Britannia seated, and facing to the right. Value around in words, date in exergue.

values. Similarly in Switzerland cantonal issues are a thing of the past; and the three Scandinavian kingdoms, while they have their several issues, strike coins agreeing in weight and value, and accept each other's money. Changes in other respects also are noticeable; for instance, the Latin language, once so generally used, has been dropped by every country except our own; and seeing that our money is so acceptable "the wide world o'er," it seems fitting that it should bear its superscription in a universal and neutral language. From current coins the Polish language has entirely disappeared; on the other hand, the Hungarian language has re-appeared; and in Belgium coins of exactly similar types and values, with French inscriptions and with Flemish inscriptions, circulate together.

It should be mentioned that for the Ionian Islands, under Russian protection, two values in copper were issued; one only is shown, as I do not possess an example of the other. At the beginning of the century the several states of the Austrian monarchy had their own mints, but the difference between the coins struck in these mints from

those issued at Vienna was usually only a different mint mark. Where it was otherwise specimens are shown.

To illustrate the present period I have tried to make up sets of the copper coins which are the authorised currency of the various nations of Europe, and have included also the nickel coins which are now being introduced in many of these countries. In Turkey, so far as I can learn, there has been no recent issue. The series for use in Finland I had thought to put in mourning, for it may be the last of its kind, however much we in England may wish otherwise.

What changes the twentieth century may effect in the map of Europe can only at this moment be matter for speculation. Our sincere hope, however, may be expressed, that whatever the changes may be, the peoples shall achieve ever growing freedom by bloodless revolutions; for as Tennyson puts it—

“Yet I doubt not thro’ the ages one increasing purpose runs,  
And the thoughts of men are widen’d with the process of the suns.”

## APPENDIX.

### THE REPUBLICS OF THE REVOLUTIONARY PERIOD.

Dates from Grote’s “Munz Studien,” &c.

France .....	Monarchical.....	Sept. 9, 1791, to Sept. 21, 1792.
Do. ....	The Convention.....	Sept. 21, 1792, to Oct. 28, 1795.
Do. ....	The Directory.....	Sept. 23, 1795, to Nov. 9, 1799.
Do. ....	The Consulate .....	Nov. 11, 1799, to May 18, 1804.
Batavian Republic .....		Jan. 26, 1795, to June 5, 1806.
Cispadane Republic.....		Dec. 10, 1796, to July 9, 1797.
Venetian Republic .....		May 12, 1797, to Jan. 18, 1798.
Ligurian Republic .....		June 26, 1797, to June 9, 1805.
Cisalpine Republic .....		July 9, 1797, to Jan. 26, 1802.
Italian Republic.....		Jan. 26, 1802, to Mar. 15, 1805.
Cisrhenish Republic .....		Sept. 17, 1797, to Jan. 23, 1798.
Genevan Republic.....		Jan. 26, 1798, to April 12, 1798.
Roman Republic.....		Feb. 15, 1798, to Aug. 30, 1799.
Helvetic Republic.....		April 12, 1798, to Feb. 19, 1803.
Subalpine Republic .....		Dec. 9, 1798, to Sept. 11, 1802.
Parthenopean Republic .....		Jan. 25, 1799, to June 10, 1799.

Republic .....	1792-1804 .....	12 years	
Empire .....	1804-15 .....	11	“
Louis XVIII. ....	1815-24 .....	9	“
Charles X. ....	1824-30 .....	6	“
Louis Philippe .....	1830-48 .....	18	“
Republic .....	1848-51 .....	3	“
Louis Napoleon .....	1851-2 .....	1	“
Empire .....	1852-70 .....	18	“
Republic ...	1870-98 .....	27	“

NOTE.—For the use of the foregoing illustrations we are indebted to the publishers of the “Boy’s Own Paper.”



“THE YELLOWSTONE PARK,” U.S.A.

By F. H. WORSWICK, M.D., M.R.C.P., Edin.

[Addressed to the Society in the Library, Wednesday, January 19th,  
1898, at 7-30 p.m.]

THIS remarkable tract of country, situated in the north-west corner of the State of Wyoming, some 2,500 miles from the Atlantic coast and over 1,000 from the shores of the Pacific, in the very heart of the Rocky Mountains, derives its name from the yellow-tinted banks



EXCELSIOR GEYSER, RISING 250 FEET.

of the Yellowstone River, which flows through the greater portion of it. This grand park has been justly termed “the wonderland of the world,” on account of the wide range of natural phenomena found therein, and it will be difficult indeed to find a similar area in any part of the world presenting a greater diversity of character. It consists of a nearly rectangular plateau at an average elevation of some 7,000 feet, a surface extent of 3,348 square miles—*i.e.*, 62 miles long by 54 in width. In 1891 the boundaries were still further extended by the addition of some large tracts of forest land on the south side, which brings up the total area at the present time to about 5,000 square miles. Its actual size may be more readily comprehended by the following familiar and local comparisons. Its

extent equals five times the area of Cheshire and Derbyshire, two and a half times that of Lancashire, four-fifths of Yorkshire, and one-third the whole of Switzerland. It is surmounted by lofty mountain ranges rising 3,000 to 5,000 feet above the plateau, many of the highest peaks being clad in eternal snow. The question will naturally enough be asked, How was it that this remarkable country remained so long unknown? Probably the exceedingly severe and long continued winters, with a varying temperature 10 deg. to 50 deg. below zero, together with the inaccessibility of the region, except for a very limited portion of the year—mid-June to September—doubtless had much to do with it remaining so long a veritable *terra incognita*.

The first record we have of a steamer ascending the Missouri River as far as the mouth of the Yellowstone was in the year 1832. It bore the name of "Yellowstone," and on board the little craft, amongst others, was that renowned traveller amongst the American Indian tribes, George Catlin, with whom is associated the conception of a national park which should contain some of the native Indian tribes and the various wild animals in all the naturalness of their native state. He it was who suggested the reservation of a large tract of land somewhere out in the west, suitably situated, wherein to preserve on a small scale the native fauna of America, as well as a remnant of the various Indian races, before their total disappearance before the march of civilisation. But the discovery of the Yellowstone wonderland was really the work of three exploring parties who passed through it in 1869 to 1871, only a quarter of a century ago; their primary and limited knowledge was obtained from the Indians themselves. The principal tribes that inhabited the surrounding locality were composed of Sioux, Algonquins, and Shoshones, but who, with their characteristic superstitious fear, had always avoided the strange and mysterious geyser region.

In 1872, due mainly to the efforts of Dr. Hayden, an Act of Congress set aside for ever the whole district as a public national park or pleasure ground. The small Niagara Park, enclosing the great falls and the still greater Yosemite, had, it is quite true, been previously set aside, but so vast a tract of country as the Yellowstone Park had not previously been allocated for the free use and enjoyment of the American people, and none the less of the whole civilised world. At the present day there are no settlements in the park, no counties, townships, cities, or villages; but there it is, in almost its primitive state, a paradise for the explorer, topographer, and geologist, the whole of it and its interests entirely under Government control, and jealously guarded, and is at the present time one of the most thoroughly explored sections of the United States territory.

The Act of public dedication recites in precise terms the purposes for which the park was created and for ever set aside, as follows:—

1st. The preservation of its natural curiosities, its forests, and its game.

2nd. The reservation of its territory from private occupancy, so that it may remain in unrestricted freedom for the benefit and enjoyment of the people.

3rd. The granting of such leases and other privileges as may be necessary for the comfort and convenience of visitors.

At first Congress manifested a somewhat apathetic spirit towards the scheme, and did not supply the necessary funds to protect and improve its new acquisition, for one cogent reason—no railway existed then within 500 miles of the park and it was not at all likely to be overrun with visitors.

The first superintendent appointed was Mr. Langford, but no money was allowed for his services; still, he held on to the position for five years, in spite of it proving to him during that period a source of great annoyance. The second superintendent appointed was Mr. G. W. Norris, in 1877, and means were provided at the same time by the Government. He proved himself a man of undoubted ability and energy, combining within himself the offices of explorer, path-finder, road builder, poet, and historian in the park, hence we notice many distinctive portions associated with his name. Captain Harris succeeded him in 1886 with a vigorous policy, which is maintained up to the present day under the able administration of Colonel York.

And now briefly as regards the topography of the Yellowstone Park. It is situated on the great continental divide of the Rocky Mountains. Three great rivers receive the waters of the park—the Yellowstone and Missouri on the Atlantic slope and the Snake on the Pacific side—whilst there are no fewer than 36 named lakes (with a total area of 165 square miles) and 25 waterfalls and mountains.

The Sierra Shoshone range of mountains has 30 named peaks, with an average altitude of 10,400 feet, and throughout the whole range it is full of noble prospects, and, as viewed in the distance across the Yellowstone Lake, it is regarded by many to be one of the finest exhibitions of mountain scenery on the American Continent, though, we venture to think, it does not equal the views of the fine mountain chains of Switzerland, and notably as viewed from the Gorner Grät at Zermatt.

The Gallatin range consists of 17 peaks, with an average altitude of 9,800 feet, embracing the highest in the park, Electric Peak towering up very conspicuously to 11,155 feet.

The Washburn range has seven peaks of an average altitude of 9,800 feet, and amongst this group is the most noted peak in the park, Mount Washburn. Thus we have in all a total of 54 peaks averaging over 10,000 feet in altitude.

Plateaux. The greater portion of the park is a plateau averaging 7,000 to 9,000 feet. The lowest part of the plateau is situated at the junction of the Yellowstone and Gardner Rivers, 5,360 feet; highest, Electric Peak, 11,155 feet.

The scenery generally, whilst far from being imposing in comparison with the cañons of Colorado and the views obtained whilst travelling on the Canadian Pacific Railway across the Rockies, is, nevertheless, more varied and beautiful; the eye is not wearied with the constant succession of vast and bare mountain heights such as may be noticed along the cañons of the Fraser River, but it affords constant change—attractive lakes, streams, now wild, now peaceful, glades, parks, forests, and indeed every combination of effects that help to produce a beautiful landscape, and the result of all is that you are left with a charming impression of the whole place.



**THE GEYSERS.**—Turning now to the principal features of the park, the wonderful geysers claim our first attention. There are three principal localities of geysers in the world, which may be named in the order of their discovery:—Iceland, New Zealand, and Yellowstone Park. For extent, variety, magnitude of phenomena, and geologic age perhaps the reverse order may be taken. Iceland possesses, in the opinion of most judges, the most famous geyser in the world, possibly because it was for a long time the only known geyser, and, as such, received a great deal of notice, but it is now generally regarded as distinctly inferior to several in the Yellowstone Park.



OLD FAITHFUL GEYSER, RISING 150 FEET.

Three noticeable features of similarity in the geyser regions are—(1) Presence of volcanic rocks of remote or recent origin; (2) proximity to the earth and surface of active sources of subterranean heat; (3) the presence of a large number of lakes. In all these cases lava, heat, and water are the characteristic geological and physical accompaniment.

Coming directly now to the Yellowstone region, we note first that the hot springs of the park are of two classes—(1) eruptive, called geyser; (2) non-eruptive, called hot springs—each kind passing

insensibly the one into the other; whilst within the limited boundaries of this geyser land there are upwards of 5,000 hot mineral springs and 71 active and powerful geysers.

A geyser may be simply defined as a periodically eruptive hot spring. The name is Icelandic in origin, from the verb "geysâ," to gush. One interesting and singular fact pertaining to this region is that in most cases the springs and geysers have no underground connection with each other; water in contiguous pools stand at different levels and powerful geysers play with no apparent effect upon others near by.

The great question naturally suggests itself, Whence comes the water for these geysers and hot springs? Old Faithful alone discharges nearly  $1\frac{1}{2}$  million gallons per hour; but what about the great waterworks that constantly feed these never-failing thousands of springs?

Regarding certain features of these geysers and the formations about them, the artistic productions are more beautiful than those associated with the quiescent springs, being formed of silica and of flinty hardness, for silica is the chief mineral ingredient in the water of all important geysers. Some of these productions are of marvellous beauty, the falling of the water, as it dashes, produces imitations of cauliflower, sponges, pieces of wool, flowers, or bead work. Nature here produces in stone, by mechanical deposits from cooling water, forms identical with those produced elsewhere of animal and vegetable life.

Old Faithful is the most perfect example known of a true geyser, and presents the following characteristics:—(1) Irregular tube descending from the surface of some inferior source of heat; (2) the mouth of this tube may be a self-built cone or mound or simply an open pool; (3) into the tube meteoric water finds its way and is subject to the action of heat; (4) the result is an eruption and explosion of the water from the tube with more or less violence; (5) the eruption is generally preceded by slight preliminary upheavals, leading generally to the final outburst; (6) after cessation of the eruption there is usually a considerable escape of steam; (7) a quiescent period of indeterminate duration follows, during which the conditions necessary for an eruption are reproduced.

Of the various theories propounded, which cannot be dilated upon here, Bunsen's appears, in passing, the most satisfactory. It may be mentioned that the nominal point of boiling water in the park is 198 deg. Fah.

**HOT SPRINGS.**—Under this head we include quiescent springs, boiling springs, mud springs or paint pots, and steam vents. In the quiescent spring the water nowhere exceeds boiling point, and the chief attractions of these springs is the inimitable colouring of the water, beautiful blues and greens, and of great depth of clear water. In no ordinary pool can one find all the colours of the spectrum as seen here, flitting about like a revolving prism, the great depth of the crater, the mineral deposits on the side of the crater, the refractive power and remarkable clearness of the water all contributing to produce these effects. The hot springs of the Gardner River are different from all others, and contain carbonate of lime, whilst most of the others contain silica.

Mud springs, or mammoth paint pots, are extremely curious phenomena; they consist of large pits or immense basins filled with the finest clay, generally a dirty white in colour, superheated and continually boiling in a sluggish kind of way; this boiling is caused by steam rising from below through considerable depths of clay, with water just sufficient to keep the material in a plastic state, and consisting of various mineral ingredients, mainly oxides of iron, which impart to the mass different colours. The steam puffing up through the mass forms the mud into a variety of imaginary flowers, such as the lily, etc., the colour of the leaves being pearl, white, and delicate pink. The mud is so fine as to be almost impalpable between the fingers. Lieutenant Doane facetiously observes that this mortar might well be good after being worked continuously for perhaps 10,000 years. We casually learned here that some Americans had taken some of this very material in order to have their residences decorated with the contents of the Yellowstone paint pots.

The tour of the park, such as ordinary travellers take for sight-seeing purposes, may be accomplished on horseback or by carriages horsed by two, four, and six horses, according to the number of occupants, the mounted ladies riding exactly like their male friends. In making the tour of the park one travels not less than 150 miles in a belt line out of some 290 miles of road all told, and the journey is usually accomplished within one week, whilst the attendant expenses, including board, lodgings, and conveyance, may be contracted for with a £10 note. The usual park mileage stations are as follow:—Northern Pacific Rail Station at Cinnebar to Mammoth Hot Springs, 8 miles; Mammoth Springs to Norris' Geyser Basin, 20 miles; Norris' Geyser Basin to Upper Geyser Basin, 27 miles; Upper Basin to thumb of Yellowstone Lake, 16 miles; thumb of Yellowstone Lake to lake outlet, 20 miles; lake outlet to Yellowstone Cañon and Falls, 16 miles; Yellowstone Cañon to Norris' Basin, 11 miles; Norris' Basin to Cinnebar Station, 28 miles; total, 146 miles. The character of the roads for the most part is bad for any kind of travelling, being composed of soft volcanic sand, the wheels of the carriages sinking deep into them and making it hard and constant collar work for the horses. There are seven good hotels, built of wood, located at convenient distances, containing 150 to 250 beds each, as well as numerous camping outfits for less pretentious tourists. From the north boundary of the park a winding road by the Gardner River rises in one portion 600 feet in one mile length. Five miles after entering the park you reach the imposing garrison, Fort Yellowstone, the seat of the park administration, the location of Colonel York, the military superintendent, and two troops of cavalry, whilst throughout the park, situated here and there, are twelve small stations occupied by an officer and four men. The whole of the roads are patrolled daily by the cavalry. The garrison quarters at Fort Yellowstone present the only village appearance in the park. Here, too, are situated the Mammoth Hot Springs, post office, and gaol, and here officers hold court to try all offenders against the park regulations.

**MAMMOTH HOT SPRINGS.**—These springs, comprising in the whole group about 50, bubbling up for untold thousands of years, have gradually built up a series of great terraces appearing like some broad,



gigantic staircase, a veritable mound of carbonate of lime, covering 170 acres. These terraces, to which the name of Cleopatra has been given, are built one upon another until the present active portion rises 300 feet, and are peculiar to this portion of the park alone. Standing in front of the terraces the appearance is very remarkable, presenting, as they do, a very delicate pink colour, which was the cause of their former name, the Pink Terraces; whilst the water constantly flows down from the highest terrace, producing a species of waterfall over each terrace in its descent. The clearness of the running water is remarkable, whilst the strong sulphur odour permeates the very atmosphere. We noticed soldiers on sentry passing to and fro to prevent anything in the way of vandalism, and the whole formation is guarded day and night. Near here, standing by itself, is Liberty Cap, the cone of an extinct spring, 45 feet high and 20 feet through the base.

Seated once more in our carriages, we move on through a rocky defile, the road rising 1,000 feet in a mile, the colouring of the rocks along with the vegetation thereon imparting a golden tinge, hence the name the Golden Gate. Here we pass a fine herd of elks, yearlings, and antelope fawns, protected within an enclosure. A drive through the open country for about ten miles brought us to Willow Park in the valley of Obsidian Creek, a dense growth of willows. Near by, in the midst of a wood, is situated a camp, where we pass the remainder of the day and night. Here we receive our first experience of camp life—the rapid felling of some of the monarchs of the forest, which come crashing down, and their conversion into the log fire, around which we sit in the darkness of the night, watching the great sparks as they fly upwards towards the bright stars we see peeping through the tops of the trees, and listening to various story tellers. As we advance further into the night we feel the keen frosty air at our back, though well-nigh roasted in front. The American hymn, “My country, ’tis of thee,” is sung by the company, and the solitary Englishman is invited to put in a stave of “God save the Queen,” and we retire to our tents to slumber peacefully in the heart of the Rocky Mountains.

Next morning, whilst breakfast is being prepared and the wandering horses are found, we visit the Apollinaris Spring, Beaver Lake, and the Beaver Dam across it. We make an early start, and a drive of two miles brings into view Obsidian Cliff, a veritable mountain of volcanic glass, 250 to 300 feet in height, the prevailing colour being jet black. It rises like basaltic vertical columns, pentagonal in form, but more or less irregular and distorted. The road along here under the cliff is made entirely of glass, the only native glass road on the continent, so they say. The method employed in removing portions of this glass mountain was as follows:—A great fire of logs was made at its base, and when the glass was heated men advanced, duly protected, and dashed quantities of cold water upon it, and so large pieces became detached.

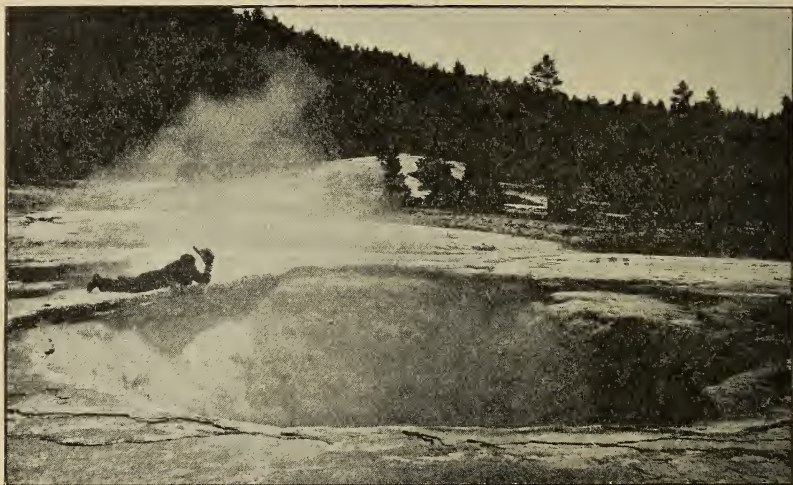
Passing on a little further we notice the Devil’s Frying Pan, a small basin of geyserite, vigorously stewing away like some great kitchen pan, with a strong smell of sulphur everywhere, and next arrive at the first geyser basin.

Norris' Geyser Basin is clearly amongst the most recent volcanic developments of the region, and occupies an area of about six square miles, and is one of the most elevated of the thermal basins. Its altitude is 7,527 feet. Here we find the noted Black Growler or Blow Hole, the only steam geyser in the park, a prodigious steam vent that may be seen and heard from afar, steaming up 60 or 70 feet like the driving blasts of a tempest, the vent apparently a foot or two across, and always bellowing night and day, and a very pretty sight indeed it was to see the rainbow through it. We were informed on the spot that this great steam jet had been quite recently measured by the United States Government and calculated at 43,000 horse power. Meeting Colonel York soon afterwards, and asking for his opinion, he merely replied it was not correct. Within a few yards of the Black Growler is the Minute Man, whom we duly timed, watch in hand, and find his spouts of boiling water at the rate of sixty per hour.

Our next drive was from the Norris' Geyser Basin to the Lower Geyser Basin, a distance of twenty miles—the road following the Gibbon River through some most magnificent scenery—onwards through Gibbon Cañon, a rocky defile four miles in length with scarce room for the river and road to pass through it. The wild grandeur of this chasm is very fine. We passed by numerous soda and iron springs, most of which we duly sampled whilst our jaded animals enjoyed the temporary rest. Soon we reached the Firehole Geyser region, the principal attraction of which is the Firehole itself. From the bottom of the river, through the clear water, a large hot spring may be seen issuing along with what is to all appearances a light coloured flame, only to be extinguished with water before it reaches the surface. This, of course, is only an illusion. We now find ourselves at the Lower Geyser Basin, covering an area of 30 miles, containing scattered groups of hot springs to the number of 700, exclusive of 17 geysers. The first geyser of note is the Excelsior, which has no equal in the park as a dynamic agent. It is really a water volcano, rising 200 to 250 feet and being 50 feet in diameter. Its crater is a vast seething cauldron close by the banks of the Firehole River, into which, in non-eruptive periods even, it pours 4,000 gallons of water per minute. The shape of the crater is irregular, its dimensions about 330 by 200 feet and 20 deep. It was not known to be a geyser until 1878, and did not disclose its true nature until 1881. During that year and 1882 it gave continuous proof of its power; at such times it doubled the volume of water in the river, and its eruptions were frequently accompanied by ejections of large rocks. It is now quiescent, not having played since 1888. We were attracted next by the white wreaths of vapour floating above the tree tops, and made our way to the Fountain Geyser, just in time to see the vertical display of 100 feet, which lasts about 28 minutes. Near these geysers is situated what is asserted to be the most perfect spring of its kind in the world, Prismatic Lake, so called from the beautiful display of colours seen in the water. It rests on the summit of a self-built mound, the creation of ages, which slopes gently in all directions, and down its sides the overflow descends in all directions. The pool is about 250 by 300 feet, whilst

over it hangs the ever-present cloud of steam, which frequently bears a crimson tinge reflected from the water. Another adjacent spring 100 feet in diameter rejoices in the name of Turquoise.

**UPPER GEYSER BASIN.**—From Lower Geyser Basin to the Upper Geyser Basin is a further drive of nine miles. This locality is the most popular of all with park tourists. Its two great rivals in the Yellowstone are the Grand Cañon of the Yellowstone River, with its gorgeous colouring, and the Yellowstone Lake; both, however, are so unlike as not to bear the least comparison. It is the home of the genus geyser as seen in its highest development, of which there are here fifteen examples of the first magnitude whose displays vary in height from 100 to 300 feet, and scores of lesser ones such as Biscuit Basin, Jewel Geyser, Sapphire Pool, Morning Glory, and Fan Grotto.



GEYSER IN QUIESCENT STATE.

The Grand Geyser ranks amongst the greatest in the world and roars like a tornado when in action. Its estimated height is from 300 to 500 feet, but it plays very seldom. The Riverside Geyser claims our attention in the fact that it spouts obliquely across the river when active, all the others being vertical. Others in the immediate neighbourhood are fancifully named after some prominent feature they happen to possess, such as the Castle, Lion, Lioness and Cubs, Giantess, etc. The Bee Hive particularly claims our notice for the symmetry of its cone, and is only surpassed by the regularity of its water column. From an artistic point of view it is perhaps the most perfect geyser in the park. The slender jet attains a great height, about 220 feet, and plays three to six times a week.

**OLD FAITHFUL GEYSER.**—We come now to Old Faithful, the last to be mentioned, although at the same time the most important and most perfect of all the geysers in the Yellowstone Park. To it, says

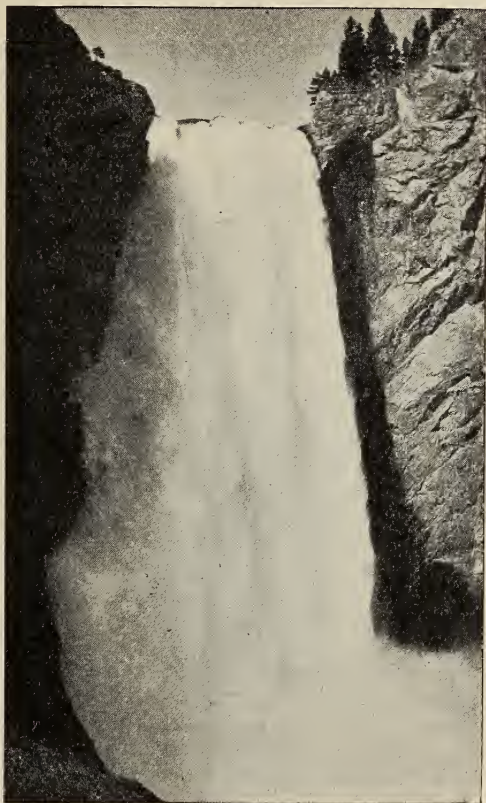


an American writer, "fell the honour of welcoming civilised man to this region." It was the first geyser that was named, and is most fittingly called "the guardian of the valley." It occupies a conspicuous oblong mound at the southern limit of the basin, measuring at the base 145 by 215 feet, 20 by 54 on the summit, and 12 feet high. The tube or bore hole, which seems to have originated in a fissure in the rock, has a measurement inside of two by six feet. The ornamentation about the crater is nowhere else in the locality surpassed for beauty of form and colour; even the three pools on the summit are all different in colour. Lieutenant Doane says: "It is the most lovely inanimate object in existence." In its eruption, too, it is equally fascinating, and stands beyond compare in point of popular interest. It always gives ample warning, so that visitors may have time to station themselves to obtain the best view. Seats are provided outside the range of the spray, so that spectators can view the display at their ease, whilst soldiers constantly guard it. The graceful column rises at first with apparent effort, as if it were a difficult matter to make a start, but later, with evident ease and in a graceful manner, to a height of 150 feet, plays for eight minutes. The noise is simply that of a jet of water, and when the upward stream is carried laterally by a gentle breeze, it unfurls itself like an immense flag from its watery standard. The water is of crystal clearness, and the myriad drops float in the air with innumerable dazzling effects. Rainbows play round the fountain, the water of which falls about the base in showers of brilliants. We sat and watched the display of Old Faithful's powers hour after hour—in bright sunshine, in the evening twilight, and in the darkness of the night—but, view him when you will, he always possessed us with a great fascination, and we were indeed loth to leave him. The uniform periodicity of this geyser is its most remarkable characteristic; it never fails to display its power to the tourist, but with an average interval of 65 minutes, it varies but little either way, night or day, but through summer's heat and winter's cold, age after age, has this tremendous fountain been playing—and, as the Americans say, "He is always on time." The enormous work it daily performs is worth noting. The United States Geological Survey in 1878 carefully calculated the outpour for each eruption, and considered it to be not less than  $1\frac{1}{2}$  million gallons for the play of eight minutes; this equals a daily total of over 33 millions. By way of comparison, it may be stated that the Manchester Waterworks supply at present, including the population of Greater Manchester, one million inhabitants, and the daily consumption amounts to 27 million gallons. So that Old Faithful alone is capable of more than supplying our needs. The geyser is justly regarded as one of the miracles of nature, and it has left upon us the impression as being the most wonderful sight in the park. The scene by night in this basin of geysers is not likely to be soon effaced from our memory. Given a few square miles of almost level geyser formation, surrounded by a dark belt of forest trees, and beyond that the mountain ranges encircling all, we stood and counted no less than fifty of these geysers of various heights spouting simultaneously, and it was indeed one of the most impressive scenes we have ever witnessed. Each night we were lulled to sleep by the roaring of these water volcanoes.

Our next drive of nineteen miles was from the Upper Geyser Basin to the Yellowstone Lake. We began the journey very early in the morning, preceded by a United States cavalry man, mounted on a well-built horse and armed with a powerful axe, whose business it was to patrol the roads first thing every morning and remove all the trees that had fallen during the night across the roadway. We drove through cañons by the Firehole River and numerous falls and cascades along one of the most interesting roads in the park for eight miles to the first of the three continental divides; we cross through the narrow cañon and along Craig Pass, which is hemmed in by precipitous cliffs, enclosing a lily-covered pond, small and unimportant, and yet most important, for Isa Lake, altitude 8,240, rests securely upon the doubtful ground between the two great oceans, the Atlantic and Pacific, and out of this little lake two rivulets make their way, and ultimately, by forming the Snake and then the Columbia, the Yellowstone and then the Missouri, thus connect the 6,000 miles of waterway between the Atlantic and Pacific. At ten miles we pull up at Shoshone Point, overlooking in the distance, through a gap, Shoshone Lake, with the range of the Teton Mountains beyond—a most charming picture. We noticed here also some fine specimens of black bear amongst the trees by the roadside who were apparently quite indifferent regarding our presence. Our feelings were not, however, of the easiest, being more accustomed to view these interesting creatures behind iron bars. The road twice again crosses the continental divide. The highest altitude is 8,345 feet. We traverse seven miles on the Pacific slope and nine on the Atlantic, and so down to the Yellowstone Lake.

THE YELLOWSTONE LAKE.—This is the gem *par excellence* of the Rocky Mountains as well as the park. The most striking feature is its great height, 7,741 feet above sea level, nearly  $1\frac{1}{2}$  miles. It has a shore line of 100 miles, and its area covers 139 square miles. As regards altitude and area, few, if any, in the world surpass the Yellowstone Lake. The shape of it was likened by the early explorers to the human hand, and the thumb of the lake was the point at which we first arrived. All along the west shore are extensive hot springs and paint pots. One of these boiling springs is called the Fishing Cone, whose base is washed by the ice-cold water of the lake, which is crammed with speckled trout easily caught with a fly. Tourists amuse themselves standing there with a stick and line, fishing in the lake and depositing their catch at the same time in the boiling crater. On the lake is the small steamer "Zillah," of 40 tons, which plies between the thumb and lake outlet, a distance of some fifteen miles, and this saves us the carriage journey round the lake of over twenty—but the fare for this short distance is 12s. 6d. The lake is noted for sudden squalls, one of which even we were not permitted to escape. The little craft heeled over before the wind, and water poured into her, when the captain called upon all the passengers to sit and stand over on the other side to keep her down and the water out; but it was soon over, and about half way on the journey we called at Dot Island to see the herd of magnificent buffaloes still kept there in a stockade, as well as some elks and deer—the latter come to be hand fed by the visitors. The sail on the lake proved very interesting, and we saw great numbers of pelicans, gulls, fish hawks, cranes, wild swans, wild geese, and ducks.

From the Yellowstone Lake the valley of the Yellowstone River extends for eighteen miles to the Great Falls and Grand Cañon, the road following the river bank all the way and through the Hayden Valley, a great tract of meadow-like land comprising some 50 square miles, elevated 7,700 to 7,800 feet, an important winter range for the buffaloes and elks. The river through here for miles is broad, and the most peaceful stream imaginable, flowing in gentle curves until fifteen miles below the lake it becomes narrow, with numerous



GRAND FALL OF THE YELLOWSTONE. HEIGHT, 310 FEET.

cascades, and banked by precipitous rocks. Near the roadside we pull up at the Mud Geyser, the most loathsome thing to look at in the whole park. Looking down into a great pit, you observe a large tunnel at an angle of 45 deg., from the mouth of which the steam is constantly ejecting tons upon tons of mud and then receding again. It is thrown up at times as high as 15 feet. Our guide remarked beforehand that ladies could never be persuaded to take a second look at it. To see the expression of disgust upon their faces was quite sufficient, and away they fled after the first glance; but the other sex



somehow or other were fascinated by what you cannot possibly call other than a most repulsive and disgusting sight. Near here we pass Sulphur Mountain, the strong odour of which, emanating from the springs, polluted the very atmosphere for miles. It was evening when we approached the Upper Falls of the Yellowstone. Seating ourselves on the rock at the falls, looking up stream we get a good view of the fine sheet of rock-bound rapids tearing away at a great and increasing velocity, steadying itself for a moment on the brink, and then plunging down 110 feet below into a fuming volume of green and white spray. As we sit and watch this immense volume of water turning over the ledge of apparently perpendicular rock, the velocity of flow is so great as to give it the appearance of a great wheel of water turning round, similar in effect to that we noticed at Niagara.

THE GRAND CAÑON OF THE YELLOWSTONE.—The next day is reserved for the Grand Cañon, and in the early morning we wend our way before the sun is fairly up to see this most wonderful valley, at nearly 8,000 feet elevation and extending over 20 miles in length, and what a grand sight it was! Who can describe the indescribable? Thousands of columns have been written in vain attempts to depict the glories of this inimitable effort of nature, in one sense, and that the highest. No word painting can possibly exaggerate the grandeur, majesty—yes, and even thrilling splendour of this magnificent gorge. After a visit, one can forgive much of the gush that has been written regarding it; for the tendency is to become so enraptured under the revelation, and so filled with enthusiasm, as to be scarcely responsible for the words uttered. But let any traveller think he has been misled in some particular, he is sure to find in other ways the half has never been told. It is acknowledged by all beholders to stand without a parallel amongst the natural wonders of the globe. Other cañons—such as the Yosemite—may have greater depth and more imposing walls, but none unite so potently as here, beauty and majesty. Take its vastness. A cross section at the top measures 2,000 feet across, is 1,200 deep, and measures across the bottom 200 feet. Such a gorge in any other part of the world would not be what it is here, clothed with vegetation, but possibly bare rocks. It may be said that three distinct features here unite their glories to enhance the beauty of this cañon—the cañon itself, the waterfall at its head, and the river below.

The river has cut out its way through the volcanic rock, which gives the colour. It is pre-eminently a cañon of colours, and one is held spellbound by the marvellous colouring of its walls. At the brink they are of a dazzling white. Conspicuous amongst its innumerable tints is yellow. Every shade greets the eye in bewildering profusion, with reds and terra-cotta intermingled with grey and pearl; but the ever-present background of all is the beautiful fifth colour of the spectrum—reddish yellow, then yellow, and then red strong and flaming—whilst the skies above surpass, if that were at all possible, the sunny skies of Italy. Talmage, the American divine, remarks: "Hung up and let down and spread abroad are all the colours of the land, sky, and sea." The head of the cañon is occupied by the Lower Falls of the Yellowstone, and, viewed in any aspect, above or below, there is a royal, dignified grandeur that is seen and felt in its regular descent of 310 feet, and, whilst not carrying over one-twentieth of

the volume of Niagara, in no single part is Niagara so beautiful, for it possesses no coloured cañon.

To enable us to view the cañon more fully we take advantage of some projecting ledges of rock. Lavender Point, so named because of the many-shaded lavender colour of its walls; others, for the view they afford, are named Lookout and Inspiration Points. Standing on the latter, you appear to be suspended in mid air over the gorge, so narrow is the point and projecting so far out into the cañon. Away down on either side, as far as the eye can reach, are seen thousands of pinnacles, towers, obelisks, and needles—all seemingly growing like the trees around them, with gigantic buttresses supporting smaller ones. Between these two points the walls of the cañon are absolute precipices; in some parts the walls are so steep and contracted as to shut out the light of day, and from the extreme bottom the stars may be seen in the middle of a summer's afternoon. The pinnacles of rock below are used by the eagles for nesting purposes; numbers of these birds are flying around us. Looking up the cañon you see the Lower Fall at its head, looking very small indeed, notwithstanding its bold leap of over 300 feet; whilst down as far as the vision can penetrate are the magnificent coloured walls, and all along the bottom at intervals are the geyser vents, constantly steaming up. Sitting here on this projecting ledge, it is true, more than of many other scenes, the oftener one sees the cañon the loftier becomes the conception of it. Here, of all places, the desire becomes most intense to be alone and commune with it. The cañon has been a theme for writers, painters, and photographers—the latter getting form, but no colour. The native artist, Morgan, acknowledged that its beautiful tints were beyond the reach of human art; whilst Folsom was the first to confess that language was utterly inadequate to convey a just conception of the grandeur and sublimity of this masterpiece of Nature's handiwork. Just one more extract from the American orator, Mr. John L. Stoddard: "The sublime scenes of our natural wonderland surpass all my expectations. The Grand Cañon of the Yellowstone is, of course, the climax. As I beheld it to-day, its long kaleidoscope of varied colours, its castles and cathedrals, spires sculptured by the Deity, and heard the voice of its magnificent cataracts, I felt it was a place where the finite prays, the infinite hears, and immensity looks on." With ourselves it has left that impression upon our mental retina.

The cañon in winter is a sealed book, for the roads are covered with heavy falls of snow 10 to 20 feet deep. Some of the drifts fill up the ravine hundreds of feet deep. The Cañon Hotel, occupying a most elevated position overlooking the gorge, is almost buried every winter; and it is not a small one either, seeing it contains 250 beds. The only method of travel is by snow-shoes, called ski. The open tourist season is scarcely four months, extending from mid-June to September.

The nomenclature of the park applied to the various phenomena is suggestive of a sulphurous empire; hence we have Colter's Hell, Hell Roaring Creek, Hell Broth Springs, Hell's Half Acre, Satan's Arbour, the Devil's Den—his workshop, kitchen, stairway, cauldron, slide, punch-bowl, frying pan, well, elbow, thumb, inkstand, etc., etc.—all this, however, is gradually falling into disuse.

The Fossil Forests of the Yellowstone are situated in the north-east corner of the park, a considerable distance out of the ordinary beaten tract, where some petrified trees may be seen in the upright position.

**FAUNA OF THE YELLOWSTONE.**—The killing of wild animals was prohibited in 1883; but even as recently as 1894 a man named Howell was caught shooting buffaloes, and severely punished. There are elk, antelopes, deer, bears (black and grizzly), buffaloes, and mountain sheep. These have recently, under the protection afforded them, much developed, and there is no reason to apprehend their extinction. Of elk it is estimated there are no fewer than 30,000 in the park. The number of buffaloes, it is thought, does not at present exceed 200, and there is a possibility of extinction, though under the rigorous protection now afforded them it is to be hoped they will flourish. The



CLEOPATRA TERRACE. MAMMOTH HOT SPRINGS.

Smithsonian Institute of Washington has allotted a sum of money to maintain a large enclosure in the park, where a portion of the herd can be kept and carefully protected—hence the only herd of bison or buffaloes now roaming in their native state on the American Continent is in the park. We observed that they had winter and summer quarters for a small number of them, so that tourists never fail to see some of these magnificent animals. Of the moose, mountain lion, wolverine, lynx, wild cat, martin, and others, the perpetuation is doubtful. The smaller species—fox, porcupine, conies, gophers, squirrels, woodchucks, etc.—flourish in great numbers; as you travel along through the park you see thousands of these smaller animals. Tourists, however, frequently express their disappointment at not seeing much of the big game, which instinctively avoid the haunts of men, and are very rarely seen from the roadside, though occasionally



you may catch sight of some up on the open mountain sides. Bears, however, generally accommodate him, and may be seen in numbers every evening round the hotels and camps. The instincts of these intelligent creatures, and the easy living round the hotels, where all the waste and scraps are thrown out, rather than forage for it elsewhere. There are a number of cubs chained to trees near each hotel. We had a three-months-old cub chained to a tree at our camp door, whose dam came out of the woods to visit it daily. No one seems afraid of them, though in our opinion distance did lend enchantment to the view. A soldier located in one of the tents had a leg of mutton, which he placed under his pillow for want of a better place to protect it; he slept soundly, and was undisturbed, but the mutton had vanished in the morning. Provisions are kept in deep pits well covered over. To catch sight of one of these full-grown animals now and again walking upright as you are driving along, is a very interesting—and, let us add, exhilarating—sight; it livens the party up a little.

We noticed about the Yellowstone Lake great numbers of pelicans, cranes, wild swans, gulls, fish-hawks, wild geese, and ducks. Eagles are not uncommon. Hawks, woodpeckers, and grouse. For disciples of Walton the park has no rival as a paradise; whilst the lake itself is literally packed with spotted trout easily caught with a fly.

Regarding the Flora of the Yellowstone. Forest growths consisting exclusively of pine and fir cover 84 per cent of its area, and willow thickets in great abundance. The great value of these forest growths is their agency in the conservation of a great water supply. It is in the Yellowstone, too, that some of the great rivers take their rise and commence their long journey to the ocean. The Missouri, with its 3,000 miles, the Yellowstone 400, the Platte 800; also the Colorado, Snake, and Green. It is somewhat remarkable, too, that whilst the territory surrounding the park is arid waste, here within it are open glades with flowers and shrubs in endless profusion, including buttercups, daisies, asters, and forget-me-nots.

The National Park Protection Act, 1895, is an interesting document, and throughout the park it is posted on boards attached to the trees to call public attention to it. It contains the following clauses:—

1. Forbidden to remove anything, deface anything, as written inscriptions, etc.; to throw anything into the geysers. (Visitors throw pieces of timber and soap into them to excite their action.)

2. Forbidden to ride or drive upon any of the formations.

3. Forbidden to cut or injure any growing timber, but camping parties are allowed dead or fallen timber.

4. Fires to be lighted only when required, and quite extinguished after; failing this, peremptory removal from the park.

5. No hunting at all allowed, only to defend oneself. No firearms allowed in the park, but to be given over to the guards. (How you are to defend yourself in case necessity arises is not stated. The soldiers at various points examine our conveyance for firearms, and remove all they find.)

6. Fishing allowed with hook and line only. (But signs exist here and there stating that fishing is entirely prohibited in that particular place.)

7. No person allowed to reside permanently in the park, or engage in any business.

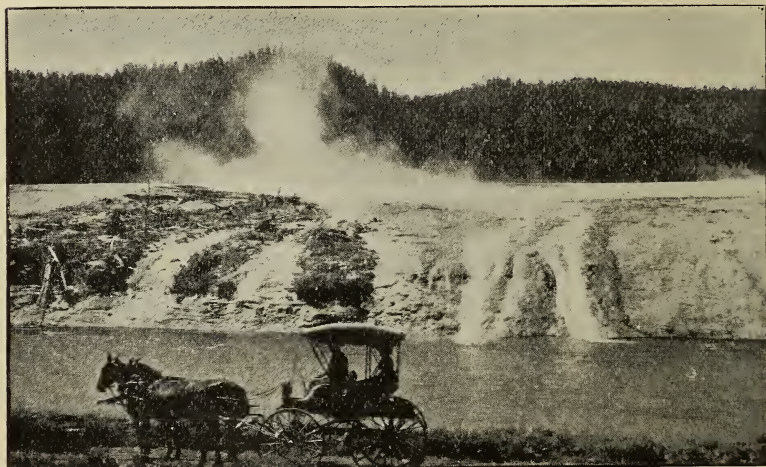
8. No herding or grazing of cattle.

9. No drinking saloon or bar-room will be permitted within the limits of the park. (We venture to think that the absolute prohibition would be quite sufficient to destroy the entire enjoyment of the average Briton.)

10. Private notices or advertisements shall not be posted. (No advertising fiend allowed.)

11. Persons guilty of disorderly conduct or bad behaviour are removed.

Any persons who violate any of the foregoing regulations shall be deemed guilty of a misdemeanour and subject to a fine of not more than 1,000 dollars (£200), or imprisoned not exceeding two years, or both, the adjudged to pay all costs of the proceedings.



EXCELSIOR GEYSER, SEMI-QUIESCENT, WITH PARK CONVEYANCE.

The last point we would mention is the park as a health resort. It is said to have only three seasons—July and August (the park summer) and winter. The maximum shade temperature in July, August, and September, is 90 deg. ; but our experience of the temperature day after day was never unpleasant. The air is pure, bracing, and not too cold. There is frost every night, and a good overcoat is required for walking out in the early morning. An inland mountain climate like this, with pure air organised by innumerable coniferous trees, is certain to possess delightful sleep-giving qualities. We can testify to this as well as the experience of its refreshing qualities. Great, however, as the facilities are for baths, they are little indulged in at present, and the short season, as well as the great distance of the park from large centres of population, is not likely at all to

produce a sanatorium there. Indeed, the place does not seem to be appreciated as it ought to be by the Americans themselves as a place of recreation. There are indeed comparatively few who visit the park, compared with the great crowd who cross the Atlantic eastwards; but fashion rules there like everywhere else, and the tourist tide at present flows towards Europe.

My sincere acknowledgments for much of the information here presented are due to Captain H. M. Chittenden, of the United States Army, for his work on the Yellowstone National Park.

---

## NOTICE ON THE "AVEN" ARMAND (LOZERE, FRANCE).

BY MESSRS. C. A. MARTEL AND A. VIRE.

AN extract from the minutes of the sitting of the Academy of Sciences in Paris, of October 26th, 1897, states:—"On September 19th, 20th, and 21st, 1897, we effected the first exploration of an 'aven' of the Causse Néjeau (Lozère), at 2 hm 500 south of la Parade. . . (after description of orifice and perpendicularity, etc.)."

"This oval grotto is 50 mètres wide, by about 100 mètres long; it descends to 840 mètres of altitude. The first half of this incline is a slope of rubbish (débris) fallen from the surface of the soil. The second part is occupied by a forest of about 200 stalagmite columns, of a height of 3 mètres to 30 mètres. Its fantastic beauty is indescribable; neither by the hand of man nor the cataclysms of nature has a single one of these miniature cathedral spires been broken. No other grotto in the world, so far as we are aware, possesses anything similar.

"The highest stalagmite hitherto known, the astronomical tower of the Cavern of Aggtelek (Hungary) has only a height of 20 mètres, whereas the great stalagmite of our 'aven' has 30 mètres; and the circle of the grotto ascends to 6 mètres and 10 mètres higher. We took these measures by the aid of a 'montgolfière.'\* The total depth of the 'aven' is from 207 to 214 mètres. It is, therefore, among the deepest in France, along with that of Rabanel (212 mètres), near Ganzes. Like many others of these pot holes, this 'aven' has a vent of a rather singular form, not at the bottom, but on the side, nearly at mid-height of a vast depression of the Causse. Hence we conclude that it formed the issue for an old lake. Its form leaves no doubt as to its ancient rôle of absorbing pit."

---

\* Montgolfière—a paper envelope filled with air dilated by spirit lamp placed underneath the balloon.



## PROCEEDINGS OF THE SOCIETY.

JANUARY 1ST TO MARCH 31ST, 1899.

---

The 499th Meeting of the Society was held in the large room of the Coal Exchange, on Saturday, January 7th, 1899.

The Victorians invited the children of the members to a festive meeting, and a large number of them responded.

A number of the children had dressed in geographical character, adding very much to the colour of the gathering.

Mr. J. D. Wilde, with a number of friends, provided an excellent selection of music.

A number of ladies took charge of the refreshment counter, which had the serious attention of the youngsters in the intervals.

Mr. Harry Sowerbutts manipulated the lantern, and exhibited several sets of slides, arranged geographically, and also a fine set of views of Her Majesty's ships, taken by Mr. Payton.

Other Victorians helped in many ways to amuse the children, to their great enjoyment.

Mrs. Harry Nuttall presented the prizes to those who had succeeded in answering the questions in the Children's Corner in the monthly issues of *Geography*.

The first prize was given to Master Bellamy, and consisted of the present of an Associate's ticket in the society. Master S. Reed and about a dozen others had atlases, books, and other prizes awarded to them.

Mr. Harry Nuttall made a few remarks, and then Mrs. Nuttall presented the prizes.

Mr. J. Howard Reed proposed a very hearty vote of thanks to the Victorians, to the musicians, to the ladies, and to Mrs. Nuttall for their kind services in the endeavour to make so pleasant a party for the children.

Mr. Reed mentioned with regret that the Rev. S. A. Steinthal was too ill to be present, and that Mrs. Doxey had been prevented from being present owing to illness in her family. He said it was especially kind of Mrs. Nuttall to come and give the prizes.

It was then suggested that a telegram of sympathy should at once be sent to Mrs. Doxey, which was done, and that the very kindest remembrance also be sent to Mr. Steinthal from the party. Mr. R. C. Phillips seconded the motion of thanks and of sympathy, and concluded by offering a prize for the best essay on the life of Captain Casati. The motion was carried unanimously, and Mr. Nuttall responded for all.

The meeting began at five o'clock, and half-past nine came much too soon for the children. It was a most successful gathering in every way.

---

The 500th Meeting of the Society was held on Wednesday, January 18th, 1899, at 5-30 p.m., in the Library.

The members of the Council held a reception of the members at 5-30 p.m., after which refreshments were served. At 6-45 the Secretary gave a short address on the year's geographical work in various countries. He dealt with seven Polar expeditions, and Asian and African exploration, with special reference to the expedition of Major McDonald to the Jub river. The Rougemont affair was also touched upon.

At 7 o'clock Mr. Wilde's musical party, assisted by Mrs. Oram, gave a fine selection of music.

At 8 o'clock Mrs. A. Little addressed the members on the Yang-tse-Kiang, giving an account of her remarkable journeys along with her husband, Mr. Archibald Little, and she exhibited a number of most interesting slides, made from photographs taken by herself in her journeys. The address was listened to with much interest, and gave much pleasure.

Very hearty thanks were given to Mrs. Little (who had attended the meeting at some inconvenience) for her valuable address, to Mr. Wilde and his musical friends, to the ladies who had kindly attended to the refreshments, and to the Secretary for his address. Mrs. Little responded.

The 501st Meeting of the Society was held in the Library on Monday, January 23rd, 1899, at 7-30 p.m.

In the chair, Mr. HARRY NUTTALL.

The minutes of previous meeting were read and approved.

Correspondence from the following persons was referred to and submitted to the meeting: Mr. J. H. Simpson, Mr. F. W. H. Howell, Mr. F. J. Payton, Mr. C. H. Bellamy, Miss A. E. Law, Rev. W. Vivian, Mr. J. V. Morton, Dr. A. J. Herbertson, Mr. H. Woolley, Rev. F. C. Smith, Miss A. Crompton, Liverpool Geographical Society, Mr. E. Steinthal, Mrs. A. Little, Alderman G. Galloway, J.P., Mr. S. H. Brooks, Mr. W. C. Armitage, Mrs. S. Goodbehere, Mr. F. J. Payton, Mr. J. A. Douglas, Mrs. E. S. Wakefield, Mr. J. Hampden Jackson, Rev. S. MacFarlane, Mr. W. S. Brown, Mrs. A. J. Street, Mrs. E. Stanford, Mrs. W. Cadman, Mr. A. J. Herbertson, Mr. J. Beardsall, and Very Rev. Dr. Casartelli.

The election of the following members was announced:—

ASSOCIATE (Prize winner): Mr. R. C. Bellamy.

ORDINARY: Rev. W. Popplewell, M.A., Mr. W. G. Gregory, Mr. John Webster, Mr. William Shaw, and Mr. F. S. Johnson.

CORRESPONDING SOCIETY: The Philadelphia Commercial Museum.

Presentations of books, etc., were announced.

Mr. W. S. BRUCE, F.R.S.G.S., of the "Balena" steamship, who has made a number of voyages to the North Arctic Ocean, addressed the Society on "Five Voyages to the Arctic Regions." Mr. Bruce described his first voyage to the Antarctic regions in 1892-3 with his friends Mr. Burn Murdoch and Dr. Donald. Then followed his experiences as the naturalist of the Jackson-Harmsworth expedition, when they fell in with Dr. Nansen and Lieut. Johansen. The next voyage Mr. Bruce made was with Mr. Andrew Coates in the yacht Blencathra to Novaja Zemlja and Kolyma, and the next also with the Blencathra to Bear Island, Hope Island, King Charles Island, and Spitzbergen. Lastly Mr. Bruce went with H.S.H. the Prince of Monaco in the yacht Princess Alice again to Bear Island and Hope Island and to the Greenland seas. The lecture, illustrated by many lantern slides, was of much value to naturalists, Mr. Bruce giving the results of a long period of scientific research. He gave a vivid description of the Barentz Sea, describing the events of his voyages and detailing some of the interesting scientific results arrived at in his investigations. The account he gave was very valuable to naturalists and scientific geographers. He illustrated his address with a number of slides from his own photographs taken during his voyages, and they added very greatly to the interest of his address. The forms of icebergs and icefields were particularly interesting.

The following report of the meeting is extracted from the *Evening Chronicle*:—"Mr. W. S. Bruce, of Edinburgh, a well-known naturalist, who has made no fewer than five voyages to the Arctic and Antarctic regions, told the story of his travels to the members of the Manchester Geographical Society at the rooms, St. Mary's Parsonage, Manchester, on January 23rd. While he may not have done anything sensational in Arctic exploration—such as reaching a high degree, he has added very largely to our store of knowledge of the ice-bound regions stretching towards either Pole. Mr. Bruce's have been voyages of scientific research. Not content with securing a fine collection of fish, animals, and marine and land vegetation, he has brought home a unique set of photographs and reproductions of paintings, the latter being from the brush of Mr. Burn Murdoch, who accompanied him on the "Balena" to the Antarctic. These pictures, thrown on the screen by means of a lantern, added immensely to the interest of the lecture. Mr. Bruce has the most unassuming style. He quietly tells you of tempestuous storms, of peril from ice packs and towering bergs, of the dangers of forcing a way far north or far south, as though he had met you in the street, and was casually passing the time of day. The first of Mr. Bruce's

journeys was to the southern hemisphere, for which he set out in the "Balena" in 1892 with Mr. Burn Murdoch and Dr. Donald. They went whaling, but had to be content with seals. At one period they were within a mile of a position which Ross had taken up long before. The voyage was not particularly adventurous, but Mr. Bruce talked in a very interesting fashion about the massive bergs they saw, and subsequently compared them with the less imposing ice in the northern regions. Returning home in 1893 he wintered at the top of Ben Nevis. 'No need to go to the Arctic regions for Arctic scenery,' he said, in effect. 'You get it all on Ben Nevis, except that it is not quite so cold.' Suddenly he accepted an invitation to join the Jackson-Harmsworth Expedition to Franz Josef Land in the capacity of naturalist. There he met Dr. Nansen and Lieutenant Johansen, and spent some exceedingly pleasant days with them. Their main work after the Windward left for home was the exploration of the western section of Franz Josef Land, where Mr. Bruce got a valuable collection of fauna. The next voyage he made was in the steam yacht Blencathra, with Mr. Andrew Coates, of Paisley, her owner. They went to the neighbourhood of Novaia Zembla and Kolguer, but found the land practically unapproachable on account of ice. The fact that there is ice one year in these regions, and none another year, accounts for the success and non-success of many voyages. Another journey in the Blencathra—according to Mr. Bruce voyaging in this yacht must have been Arctic exploration de luxe—was to Bear Island, Hope Island, King Charles Islands, and Spitzbergen. Yet once again was he enabled to go north under comfortable circumstances, this time with the Prince of Monaco in his yacht the "Princesse Alice." They visited Bear Island, Hope Island, Spitzbergen, and the Greenland Seas. All the while Mr. Bruce was diligently adding to his collection, either by search on land or by dredging in the depths of the polar seas. He was very expectant, he said, to find Andrée back this autumn, but when he heard that his old ship, the "Balena," had been to Franz Josef Land and had seen no sign of him, he was afraid Andrée was no longer. But it was thought there was some chance yet, and it was the earnest hope of all that they might see him next autumn. Later on Mr. Bruce paid a compliment to Lieut. Peary, who, he said, had gone forth with the determination of reaching the North Pole or not returning at all. He thought Peary was the man who would reach the Pole."

The very best thanks of the meeting were given to Mr. Bruce for his kindness in coming from Edinburgh to give this valuable address.

Mr. Bruce responded.

---

The 502nd Meeting of the Society was held in the Library, on Tuesday, January 31st, 1899, at 7-30 p.m. In the chair, Mr. HARRY NUTTALL, vice-chairman.

The minutes of previous meeting were read and approved.

Dr. A. J. HERBERTSON, F.R.G.S., addressed the Society on "The Teaching of Applied Geography," having particular reference to his report to the Society on this subject made at the request of the Council, and which inquiries have been most extensive and complete.

Considerable discussion took place at the conclusion of Mr. Herbertson's address by several members.

Monsignor GADD, V.G., remarked that he claimed for the English traveller and English soldier greater opportunities of collecting information to aid and assist Commercial Geography than are within the reach of subjects of any other country. He regretted that all or the greater part of this knowledge, so arduously acquired and so valuable to us, lay for ever locked up in the private diaries of individuals, or in the Intelligence Department of the War Office; though some of it (but very little) did reach us occasionally in the form of a book of travels. He expressed surprise that no Geographical Society nor lecturer on Commercial Geography offered the least suggestion for reaching and utilising this immense store of commercial wealth. He instanced this by the fact that of the many reports and forms of syllabus from England, Holland, France, and Germany, brought under their notice by the lecturer that evening not one made the least reference to this



valuable source of information. He begged the meeting to consider and see if some systematic plan could not be devised for garnering in a few sheaves now and then from this field; and put to himself and to them this important question: "How can English travellers and officers in the English army be induced to supply us, privately or otherwise, with the result of their observations and impressions of the countries through which they pass, in so far as such knowledge would be useful to our Commercial Geography, and so benefit our commerce?"

Mr. HOYLE moved and Mr. WILDE seconded a resolution of thanks to Dr. Herbertson for his exceedingly valuable report and for his address. The resolution was carried, and Dr. Herbertson responded.

The 503rd Meeting of the Society was held in the Library on Tuesday, February 7th, 1899, at 7-30 p.m. Mr. HARRY NUTTALL, vice-chairman, in the chair.

The minutes of the previous meeting were read and approved.

The election of the following members was announced:—

ASSOCIATE: Mrs. E. E. Cottrill, Mrs. R. A. Hepworth, and Mr. Quentin Bluhm.

Mr. J. ARCHIBALD DOUGLAS, M.A., addressed the Society on "Cashmere and Thibet," illustrating his address with maps, water-colour drawings, and photographic slides.

Mr. Douglas was very heartily thanked at the conclusion of his address, to which Mr. Douglas responded and replied to questions.

The 504th Meeting of the Society took place in the Library on Wednesday, February 15th, 1899, at 7-30 p.m. In the chair, Mr. HARRY NUTTALL.

The minutes of previous meetings were read and approved.

The election of Mr. H. E. Storey as an ordinary member was announced.

The following presentations were announced, as well as a number of others:—

Presented by Mr. S. H. Brooks, F.I.Inst.: "The Cornish Magazine," Vol. I. Very beautifully illustrated.

Presented by the Agent General for Tasmania: "Tasmania and its Mineral Wealth." With maps and illustrations.

Presented by the Etat Independent du Congo: "Annales du Musée du Congo." Serie i. Botanique; Serie ii, Zoologie. Two most interesting and valuable books on the Fauna and Flora of the Congo State.

Presented by the Royal Gardens, Kew: "Selected Papers from the *Kew Bulletin*." i, Vegetable Fibres. This is a most valuable reprint of papers from the *Kew Bulletin* on Vegetable Fibres suitable for Textile Fabrics, and is a most interesting volume.

Letters from a number of correspondents were read.

Mr. J. M. BORASTON addressed the Society on his "Travels in Brazil in 1898," and illustrated a most interesting address with a large number of lantern slides from his own photographs taken by him on his journey.

Mr. J. R. SMITH moved a very hearty vote of thanks to Mr. Boraston for his interesting address, which was seconded by Mr. J. D. WILDE, and carried. Mr. J. M. Boraston responded.

The 505th Meeting was held in the Library, on Monday, February 20th, 1899, at 7-30 p.m.

This meeting met to consider the question of map changes in 1898, but there being only a very small attendance was adjourned

The 506th Meeting of the Society was held at the Albion Hotel on Wednesday, February 22nd, 1899, at 7-30 p.m. In the chair, Mr. S. OGDEN, J.P., one of the vice-presidents of the Society.

Mr. S. H. Brooks, one of the Trustees of the Society, placed the members under very great obligation to him for his invitation, which was responded

to by a large number of members. Many others were disappointed at not being able to be present for lack of room.

Mr. Brooks had secured the attendance of Madame Marie Andersen, Mr. Charles Saunders, Mr. J. W. Gagg, Mr. J. H. Cockerill, Mr. Charles Capper, and Mr. Ernest Cookson, whose vocal and instrumental music was rendered with great charm. Mr. W. E. Partington was the lantern demonstrator.

The following note from the *Manchester Evening Mail* of January 24th will show the manysidedness of Mr. Brooks:—

“We propose briefly to sketch the career of Mr. S. H. Brooks, a gentleman well known in Manchester as the managing director of the firm of Messrs. Brooks and Doxey, Limited, engineers, at West Gorton and Newton Heath. Mr. Brooks may, however, be regarded as having a close connection with the cotton trade, inasmuch as his firm’s manufactures consist principally of mechanical appliances embodying the latest results of inventive genius so far as its application to cloth production is concerned. The business was established by the late Mr. Samuel Brooks in 1858, and from a staff of half a dozen employees the number of workpeople engaged has increased until it now numbers nearly 2,000. From making roller temples for looms,



MR. S. H. BROOKS.

By permission of the Proprietors of the *Manchester Evening Mail*.

the firm now makes nearly every machine required for the transformation of raw cotton into yarn on the ring system. Nearly every machine has incorporated in it some valuable patented speciality, the invention or property of the firm, which for improvements in cotton machinery has received the highest recognition, amongst other exhibitions, at those of London, Antwerp, New Orleans, and Barcelona. The firm, which has a wide connection and has successfully carried out many contracts for the erection and equipment of mills at home and abroad, has rapidly extended its operations since its conversion into a limited liability company, of which Mr. S. H. Brooks has officiated as managing director in a way that has upheld the concern’s reputation for enterprise and good management. Mr. Brooks, amidst his many commercial duties, has found considerable time to attend to the public affairs of Manchester in his capacity of Councillor for St. Mark’s Ward, a position, however, which he resigned last November. The branch of Corporation work upon which Mr. Brooks more particularly left the impress of his ability was that in connection with the Fire Brigade, of the committee controlling which he was the chairman for eight years. Mr. Brooks has strongly developed military inclinations, and amongst other

positions he has filled is that of secretary and treasurer of the Volunteer Officers' Association. Every year he gives a dinner to the veteran warriors employed by the firm who fought in the Crimea, and it may also be mentioned that during the Queen's Jubilee he entertained the New South Wales Regiment who came over to take part in the national rejoicings. Mr. Brooks combines many valuable characteristics, for besides being actively associated with the volunteer movement, he is a bibliophile with a rare collection of books, and as a lecturer has gained considerable popularity. For several years past he has taken a very great interest in the picturesque scenery of the Scilly Isles, to which he has made many visits. He possesses a very fine collection of photographs of the islands, and it is one of his pleasures to reproduce these in the form of limelight views for the benefit of deserving objects."

After Mr. Brooks had received the members, Mr. Ogden called upon him to address the meeting upon "A Tour in the Scilly Islands."

Mr. Brooks, before commencing his journey, called upon Madame Marie Andersen, who delighted the audience with her tender and graceful singing of that appropriate song, "The dear homeland," for it was all about the dear homeland the audience were going to hear and to see. Then Mr. Charles Saunders, almost ere the applause of the previous song had died away, was at the front of the platform sweetly trilling forth that favourite old song so long popularised by Sims Reeves, "My pretty Jane." The delicate phrasing was truly admirable, and his pure strains evoked loud applause at the finish. Then the lantern operator, Mr. W. E. Partington (of Manchester), assisted by Mr. Charles Mason, set to work, and they were kept busy during the remainder of the evening, except when the frequent musical interludes gave them an opportunity for a little rest. The first view was one of the Manchester Town Hall and the Central Station, Manchester. Then followed some hundreds of views of the scenes *en route*. Well-known views in Derbyshire succeeded each other in rapid succession just as if the audience had been scudding over the country by the new express system that promises a rate of 150 miles an hour. Before they were well aware of it they had reached Derby; then rushing through Warwickshire, Worcestershire, Gloucestershire, and Somersetshire, the audience at length found themselves in Devonshire and Cornwall, where the lecturer indulged in more detailed descriptions of the number of places thrown upon the screen. One special feature had a charming effect. When any of the great historic cathedrals on the route were shown, Mr. Ernest Cookson, the pianist, passed over to the harmonium and performed in subdued tones a selection of sacred music, the treble part being exquisitely reinforced by the sweet tones of the violin, played by Mr. J. W. Gagg, of the Hallé Concerts. It can easily be imagined how greatly these performances encouraged the illusion that one was really standing inside Gloucester or Exeter Cathedral. Mr. Charles Capper, the famous siffleur, by special permission of Mr. Charles Morton, of the Palace Theatre, London, presented himself before the audience with a piece of very arduous work before him. The great difficulty in the position of a public whistler, we should say, is this—to take himself quite seriously, and to impress his audience with the thorough conviction that the whole affair is not a farce. Doubt was not of long duration. "Il Bacio" was the selection, whistled with pianoforte accompaniment, and the loud and brilliant strains evoked unqualified admiration and applause. We cannot say, however, that all the notes were ideally so perfect as the majority of them were. A few were wanting in the clearness and resonance which were the general characteristics of the performance. Loud applause greeted the artiste, and on any other occasion the demonstration would have been taken for an encore, but there was too much to get through for anything of that kind to be permitted. He subsequently whistled "Tell me, my heart," with the same degree of success. The performances on the violin by Mr. J. W. Gagg were extraordinarily attractive. The Scotch fantasia, introducing "Auld Robin Gray," "There is nae luck," etc., was an entrancing example of delicate manipulation.

"Every smooth turn, every delicious stroke,  
Gave life to some new grace."



There was not a note but was turned off in perfection, not a tone but was pleasingly round, full, and polished as it were a gem. The imitation of the bagpipes was interesting and very clever, and the rapid arpeggios a triumph of deft bowing and fingering. When his performance was over loud and long applause followed. The audience would have liked a great deal more of the same kind, but there was only time for a little of each amongst such a sumptuous banquet of good things. All the artistes appeared again at intervals, but we must devote the remainder of our space to the lecture. Having arrived at Penzance, Mr. Brooks described the embarkation for Scilly. He said the group of islands were three hundred in number, but many of them were very small, and but five were populated. Far away in the south-west corner of England, the lecturer continued, are a group of islands with a keenly interesting history, possessed of great natural beauty, and peopled with a hardy race, half seamen and half agriculturists. Within a short voyage from the mainland these delightful islands lie in an emerald sea, and a greater change from stereotyped holiday resorts can hardly be imagined. The temperature of the islands is about 47 Fahr. in the winter months and about 58 Fahr. during the summer, the Scillonian winter being equal in warmth to our average April. Frost and snow are almost unknown. If snow falls it melts within twenty-four hours. In the Isles of Scilly there are but three seasons—spring commences at Christmas and lasts until April, then summer commences and lasts till October, and autumn arrives and remains in these favoured islets until Christmas. The winds are chiefly from the west and south, and the warm Gulf Stream enfolds the islands in its close embrace. Those who are seeking a little rest from the hard grind of noisy existence in our large towns will find a quiet haven in these islands, where the postmen cease from troubling and the news sheet is at rest. There are no gasworks, manufactories, or factories on the island, no noise to worry the nerves, very little traffic in the quiet Hugh Town, no trains, trams, or omnibuses—nothing but ozone-laden breezes fresh from the wide Atlantic and brilliant sunshine, and for occupation boating, sea fishing, and sea bathing, the weather never being too cold for the most delicate person to go out every day, and never so hot as to be oppressive. The Isles of Scilly, Mr. Brooks went on to say, were situated about 27 miles to the west of Land's End. St. Mary's, the principal island, was distant from Penzance about 40 miles, the average passage taking about 3½ hours. Between this port and the islands a regular communication was maintained by steamships throughout the year. Five of the islands were inhabited, St. Mary's having 1,160 inhabitants at the last census; Treco, 315; St. Martin's, 174; St. Agnes, 130; and Bryher, 91. St. Mary's was the chief island, and there the metropolis, Hugh Town, was situated. Here were shops, and hotels, and the port. Treco was to the north-west, and was reached by boat from St. Mary's in twenty minutes or half an hour. At Treco are the noble gardens of the lord proprietor of the islands, Mr. T. A. Dorrien Smith, in which the visitor could wander amid tropical vegetation—certainly the most beautiful and interesting garden in the kingdom. Bryher lies to the westward of Treco, and affords some grand view points. Samson, the scene of Sir Walter Besant's delightful romance, "*Amorel of Lyonesse*," through reading which many persons had their first introduction to the Flower Islands, had not been inhabited since 1853. St. Agnes and St. Martin's had their own special points of interest, and were inhabited by a sturdy race of farmers and pilots. The lecturer then gave a description of the voyage from Penzance to the islands, and on the screen were depicted some pictures of passengers in the throes of mal-de-mer, but their misfortunes were only greeted with shouts of laughter by the audience. Adverting to the Scilly Islands, an interesting account was given of the fortifications of the islands, and also of their historical associations. The Scilly Islands, however, were noted especially for flower culture, it not being unusual in a busy season for fifty tons of flowers to be sent away at a time. Slides were here shown, giving to the audience some idea of the vast industry in the growth and despatch of flowers, which were sent to cheer the town dwellers in the great centres of commerce of Britain. There was also exhibited a scene from a garden at Algiers, and it conveyed to the audience the great similarity of the vegetation with that of the

Tresco Gardens. The lecture concluded with a description of the Abbey Gardens at Tresco, where there were to be seen growing in abundance graceful palms, gum trees, Cape aloes, the gigantic cactus, camellia trees, Indian azaleas, and fuchsias more like forest trees than garden plants, in addition to fruits usually to be found in tropical countries, yet growing in these islands without the aid of artificial heat. Several views were also given by Mr. Brooks of recent wrecks which had deprived many of near friends—the “Mohegan,” on the great Manacles Rock on October 14th, 1898; the “Blue Jacket,” on the 2nd of November, on the Longships, off Land’s End; and the s.s. “Brinkburn,” on the Maiden Bower Rocks, Scilly, on December 22nd, 1898. The pictures of the recovery of the bodies from the “Mohegan,” their conveyance through the streets, the arrangement of the bodies laid out for identification, the funeral service, and the coffins as they lay in the great general grave—all these were extremely pathetic.

At the conclusion of Mr. Brooks’ address, which had been listened to with very great interest and attention, and illustrated by about 400 lantern views, the Most Reverend Monsignor GADD, V.G., expressed his intense delight at the great enjoyment with which he had listened to Mr. Brooks, to the grand procession of splendid lantern views, and to the charming and delightful musical productions of the choir Mr. Brooks had brought with him. He therefore proposed a very hearty vote of thanks for the excellent address, and for the kindness of Mr. Brooks and his friends.

Mr. C. H. SCOTT heartily seconded the motion, saying it was one of those precious occasions whose grateful memory would long remain.

The motion was carried with acclamation.

A very kindly vote of thanks to Mr. Ogden for presiding was also passed very heartily.

Mr. OGDEN having responded, Mr. Brooks responded by inviting the members to some light refreshments, a kindness very highly appreciated by the members.

Mr. Brooks has repeated this lecture at Ashton and at Warrington.

The 507th Meeting of the Society was held in the Chemical Lecture Theatre, Owens College (by special permission), on Wednesday, March 1st, 1899, at 7-30 p.m. In the chair, the Rev. S. A. STEINTHAL.

Miss LILLIAS HAMILTON, M.D., lately returned from Afghanistan, and who whilst there acted as medical adviser to the Ameer and his Court, addressed the Society on that country. She illustrated her address with lantern views, and referred to the reasons which led her to go to Cabul; to the Ameer and his Court; to the methods of Government of Afghanistan; and to social life and manners.

Very hearty thanks were tendered to Dr. Hamilton for her interesting and brilliant address. Dr. Hamilton responded.

Thanks were heartily given to Principal Hopkinson and the College authorities for the grant of the use of the theatre.

The 508th Meeting of the Society was held at the Manchester Grammar School, on Friday, March 17th, 1899, at 5 p.m. (by permission of the High Master). In the chair, Mr. J. E. KING, the High Master.

This was an especially interesting meeting, as, besides a large attendance of members, a large number of the Grammar School boys were present.

Mr. E. F. G. HATCH, M.P., addressed the meeting on “Our Indian Empire,” being personal reminiscences of a recent tour from London to the North-west Frontier of India.

Mr. Hatch illustrated his interesting address with a set of fine coloured slides, and Mr. Ernest Cookson performed an excellent musical selection. Mr. W. E. Partington took charge of the lantern.

At the close of the address a very hearty vote of thanks to Mr. Hatch for his address, and to Mr. King for his permission to use the room, was

proposed by Mr. E. W. MELLOR, which was seconded and carried. Mr. Hatch responded.

Previous to the address a lunch was partaken of at the Albion Hotel by a number of members of the Council and Mr. Hatch.

Mr. HARRY NUTTALL moved, and Mr. S. OPPENHEIM seconded, a motion that Mr. Hatch, being a member of the Society, he should be elected a vice-president. Mr. Hatch very kindly accepted the election.

The 509th Meeting of the Society was held in the Library on Tuesday, March 28th, 1899, at 7-30 p.m. In the chair, Mr. HARRY NUTTALL, vice-chairman.

The minutes of previous meetings were read and approved.

The election of the following members was announced:—

ORDINARY: Mr. Leigh Howarth, Mr. E. F. G. Hatch, M.P., Mr. J. B. Sutton, Mr. C. W. Griffiths, and Mr. J. H. Aked.

LIFE: Miss Ethel Doxey and Mr. J. Howard Hill.

A large number of presentations were announced, and amongst them were the following:—

Presented by Mr. George Thomas: One vol. "*Rheinisches Album oder Beschreibung, Geschichte und Sage des Rheingaus und Wisperthales.*" Von Adelheid von Stollerfoth mit 30 Stahlstichen, etc. Mainz: C. G. Kunze.— One vol. "*Die Mosel mit ihren Ufern und Umgebungen Von Koblenz Answärts bis Trier in Stahlstichen.*" Von Karl V. Damitz. Köln: 1838. Schumacher and Co.—One vol. "*Nord-Fahrt nach dem Nordkap, den Inseln Jan Mayen, und Island.*" Von Dr. Georg Berna, etc. May-October, 1861. By Carl Vogt, Frankfurt: 1863.

Presented by Mr. R. E. Dennett: "Notes on the Folklore of the Fjort" (French Congo). By R. E. Dennett. Illustrated, 1898.

Presented by Mr. G. H. Warren: "Views of J. H. Flickinger and Co.'s Orchard and Cannery, San Jose, California."

"Wholesale Co-operative Society's Annual, 1899."

Presented by Dr. Kelynack: Thirty-five copies of the "*Courier*" for Ragaz Pratigau, Davos and the Engadine, from April, 1898, to February, 1899.

Presented by Etat Independant du Congo: "*Annales du Musée du Congo.*" Serie i. Botanique; Serie ii, Zoologie.

Presented by the Wisconsin Academy: "Transactions of the Wisconsin Academy of Sciences, Arts, and Letters." Vol. XI., 1896-1897. With 50 plates.

Presented by the Norwegian Geographical Institute: Eighteen maps, as follows: "Specialkystkart," 1/50,000. A 16<sup>1</sup>, A 16<sup>2</sup>, B 37<sup>2</sup>, B 47, B 49.— "General kart," 1/400,000. XIII.—"Amtskart," 1/200,000. S. Trondhjems amt (S.E. sheet), "Topografisk kart over kongeriget Norge," 1/100,000. 4 A, 27 A, 27 C. I 17, K 16. L 15, L 16, S 3, T 2, T 3, Y 4.

The presentation of the following Cabinet portraits for the Society's album was announced: Mr. N. Kolp, the Very Rev. L. C. Casartelli, M.A., Ph.D., etc., Mr. E. L. Lombard, Mr. C. H. Scott, Mr. J. H. Walker, and Captain Casati and Gessi Pasha (by Captain Casati).

A very large amount of correspondence was presented to the members.

Mr. D. F. HOWORTH addressed the Society on "Changes in the Political Map of Europe during the present century," as illustrated by a collection of copper coins. This was a most interesting and valuable address, and was illustrated with a large number of cabinets of coins, which added very greatly to the charm of Mr. Howorth's address.

A very hearty vote of thanks was tendered to Mr. Howorth for his kindness in giving the address, and to the great trouble he was at to give explanations and to reply to a large number of inquiries made by the members.

Mr. Howorth responded.

The SECRETARY called the attention of the members to the large number of members who had died in the last two or three months, on an average two or three every week. Very heartfelt sympathy with the survivors was expressed by the meeting.



# THE JOURNAL

OF THE

## MANCHESTER GEOGRAPHICAL SOCIETY.

---

### THE PANACEA FOR CHINA.

By Mr. G. M. E. PLAYFAIR, H.M. Consul at Swatow, China.

[Read to the Members by the Secretary.]

CHINA has been called "the sick man of the far East," and truly the analogy here drawn between the Middle Kingdom and Turkey is sufficiently close for the comparison to stand analysis. Here we have an empire, huge of bulk, a very Falstaff of a country, yet so devoid of energy, strength, and, apparently, of resources, that we have seen it fall prostrate, almost without a struggle, at the feet of a race with only a tithe of its population, and which it had for centuries boastfully despised. Japan's facile triumph tore the disguise from the features of the Veiled Prophet, and the terrible bogey appeared the spiritless braggart he is and had been (could people have only guessed the truth) for centuries. Credit is due to Japan if only for this astounding *exposé*. To have "grasped the nettle" as she did was evidence of high courage and determination. It was Lord Wolseley who, some years ago, spoke of China as a possible danger to the West, and, as an ally whose co-operation might be valuable. His opinion—now known to be quite baseless—was shared by many. The German Emperor was said to have been inspired by the same idea when he gave to the world his allegorical picture of the "Yellow Peril." A similar notion led a recent writer in an English magazine to represent China's 400 millions overrunning the world under the leadership of a Chinese fanatic. The story contains some curious misconceptions. It is impossible that the author can have given a moment's thought to the problem he undertook to depict, or he could not have imagined that the 400 million inhabitants of this empire (granting there are 400 millions) are all males and that all these men are of the soldiering age. A

VOL. XV.—NOS. 4-6—APRIL TO JUNE 1899.

very slight consideration will show that, of every 100 persons, natives of a country, not more than 50 are likely to be males; and that, if from these are deducted the aged and the very young, the residue will seldom be more than 20. Hence the invading yellow horde could not in any case exceed 80 millions. Again, to assume that this devastating expedition was under the leadership of a native involves an ignorance of the Chinese nature. The Chinese is incapable of leading, just as in the arts he can imitate but not invent.

That China should ever become the scourge of Western civilisation is, we trust, fully recognised since 1895 to be an impossibility. Still it must be admitted that, so prolific is the race, so adapted to survive by its qualities of toil and thrift, that China, whatever be her political destiny, is fated to remain an ineffaceable geographical expression. Her 400 millions (or 300 millions, whichever it may be) are never going to be "improved off" the face of the earth, as it happened to the Red Indians and the Maoris.

As has been pointed out, it is extraordinary that the nations of Europe should have addressed themselves so industriously to the partition of Africa, when they have in China a country much easier to subdue and of richer promise in every way. The climate is superior, and the prize to be gained far more worth the winning. Within the last year, however, the West appears to be realising this fact; hence are these recent acquisitions of territory and these definitions of "spheres of influence." Germany may be said to have begun, when the "mailed fist" descended on Kiaochow, a spot, be it noticed, which Russia was said to have already marked for her own. Russia followed suit by obtaining the "usufruct" of Port Arthur and Ta-lien-Wan. France laid hands on a port in the Liechow Peninsula, and Great Britain, in self-defence, negotiated the lease of Weihai Wei, in doing which she is believed to have effectually minimised Russia's intended predominance in the Gulf of Pechihli. The extension of Kowloon territory, though apparently part of the same series of aggrandisements, was really unconnected with them, having been treated for years ago, and the fact of the agreement coming into effect contemporaneously being pure coincidence.

But the above tactics are only temporary expedients; it has been tacitly admitted that it would be vain to count on encroachments ceasing at these points. To this is due the definition of "spheres of influence." Russia claims Manchuria; France supremacy in the Southern provinces; Germany has contented herself with Shantung; Japan has hinted that she feels an interest, which she trusts may be exclusive, in Fuhkien, Great Britain, apparently wondering where this sort of thing was going to end, has bluntly expressed the intention of allowing

no alien finger in the Yangtsze Valley pie, without, however, specifically defining what extent of territory she understands to be comprised under this title. This indefiniteness is, I think, an advantage.\*

But specific leases of territory and definition of "spheres" will only serve to stave off the evil day. The day of reckoning is approaching, and the questions of the hour are: "Must China yield to outside pressure and consent to be dismembered?" or, "Should she resist?" If to the latter we give an affirmative reply, a subsidiary enquiry presents itself: "Can she do so with any chance of success?" To which the only answer is: "As she is at present circumstanced, she certainly cannot." Then, is it feasible so to strengthen her that she will ever find it possible?

That she is for the moment unable to defend herself is a proposition which needs no proof. The war with Japan is answer enough. Moreover history, if consulted, will show that China has been for many years gliding down a chute; that her actual decadence is no sudden phenomenon, but the resultant of forces which have been at work for years. She has been shorn *seriatim* of all her subject States—Burmah, Annam, Formosa, Korea, all have gone. Part of Kirin helped to round off Russian possessions years ago, and of the fate of the remainder of Manchuria there is little cause to doubt. Part of Ili went; more may very well follow. Thibet alone remains. These, after all, were but excrescences; their amputation has not gravely affected the vitality of the trunk; nay, indeed, have conduced to its well-being. It is the trunk which is now menaced. What we have to consider at present is—

1. Is it to our advantage to preserve the integrity of China?
2. If this ought to be done, are we the nation which ought to do it?
3. How should we, in that case, set about it?

Before discussing these points *seriatim*, I would remind you that the British Government has repeatedly disavowed any wish to take a share in the dismemberment of China, and I think the disavowal is sincere. We should rather see her strong enough to maintain her independence.

#### I. IS IT TO OUR ADVANTAGE TO PRESERVE THE INTEGRITY OF CHINA?

Distinctly it is so. China represents to us a market for our goods. The wider the territory included in the term "China" the more numerous the outlets for our trade. Every territorial subtraction to the advantage of another Power means so many

---

\* See Appendix.



outlets the less ; so many doors, open at present, to be slammed in our faces. Did we know the British policy of Free Trade to be customary among the dismemberers, it might be immaterial whether the conquered Chinese were to be called French, German, or Russian subjects, or to retain their present allegiance. But we know by experience that there is no expedient dearer to the Continental Governments than differentiation of duties in favour of their own nationals.

It is, therefore, obviously to our advantage that the Chinese Empire, with which we have treaties and recognised trading facilities, should subsist as wide in area as possible.

## II. IF THIS OUGHT TO BE DONE, ARE WE THE NATION THAT OUGHT TO DO IT ?

No nation is so well fitted for the task as we are (without adding the fact that we are, perhaps, the chief people willing to do so).

I believe we have the power.

In no Western people has China so complete a trust as she has in us. I have read in the press many a jeremiad on the decay of British prestige in the far East. It has been drummed into me that the supineness of successive British Governments, where our interests in the far East are concerned, has brought us into contempt, and that "British" is to the Chinese synonymous with vacillating and untrustworthy. Be comforted; there is no ground for these lamentations. To the Chinese the Briton stands supreme as a man to be relied on; who never goes back on his word; who may be trusted to do what is right and honourable every time. I am perfectly confident in saying that no other nation occupies the same position that we do in this respect. The Chinese understands that justice we will have; but that this is both subjectively and objectively. Other Powers may be feared—undoubtedly they are—and they may succeed in wringing concessions from China by playing on the feeling; but Great Britain is the one country which can gain such concessions through nothing but goodwill. I have heard it asserted that we stand lower in the far East than we used to stand. This is not so; we stand as high as ever, and maybe we never stood so high as we do now. Let me tell you a story; it is not of Chinese, but it illustrates my meaning. Some seven or eight years ago Captain (now Colonel) Bower made a journey from Cashmere to China, traversing part of Thibet and emerging eventually at Shanghai. I saw him there, and have never forgotten an anecdote he related. One of his problems was to carry the necessary money. What he did was to take with him a quantity of Indian bank notes,

thinking that if he were to come across Mahomedans he would be able to dispose of them for silver, since all Mahomedans make pilgrimages to Mecca and pass through India on the way. In Chinese Turkestan he had occasion to seek to change some of these notes, and offered them to a Mahomedan trader. The latter, somewhat to the surprise of Captain Bower, refused to take them. "No," he said; "you may find yourself in want of the money they represent later; I will not take your notes. But I will let you have any silver you require; 10,000 rupees; 20,000 rupees—any amount. You can give me your note of hand." "But," said Captain Bower, "you do not know me; you never saw me before in your life." "That is true," the merchant replied; "but you are an Englishman; that is sufficient security for me."

Such is the position we occupy in China. "You are an Englishman; that is sufficient security for me." I also believe that among Europeans the position is unique. On this ground alone we are the proper nation to undertake the strengthening of China. The foremost qualification a successful physician needs is the gift of inspiring confidence in his patients. This qualification we possess.

### III. HOW ARE WE TO SET ABOUT IT?

China is in the position of a man shivering with malarial fever, who has a bottle of quinine in his pocket, but does not know that in it he possesses a specific for his ailment. In other words, he is ignorant of his own strength. China has similarly no conception of her own resources; we must begin by teaching her. We are told, on apostolic authority, that "the love of money is the root of all evil." Observe that the apostle speaks not of money but of the love of it. Money is a good thing in itself. Now money is what China wants. If we institute a comparison between our own country and China, we shall find the following distinguishing points: We have long given up all pretence of being a self-sufficing country, but China is a land which can produce within her own borders every commodity she needs. In England we could not maintain existence for more than a few weeks without supplies drawn from outside. This constitutes our gravest danger when a possible war is contemplated. We are the manufacturers of the world, but to secure this monopoly we have sacrificed the power of production which would have made us independent of foreign lands in the matter of nutriment. In mining our coal and iron we have undermined our wheatfields. From this we may deduce that it pays us better to buy food with our manufactures than to, so to speak, "find ourselves" in the item of provisions. In China it is pre-

cisely the converse. The Chinese is, before all, an agriculturist. His only product which is not exclusively connected with agriculture is silk. The only agricultural product he exports in any quantity is tea. With these two articles he may be held to purchase all the foreign goods he stands in need of. As the sum total of his exports amounts to what is small in comparison with the population of his country, it may be predicated that so far foreign traders have but scratched the surface. Give China a larger internal production and she will at once have more to spend externally on what she cannot herself produce. Our policy is to teach her to make more of her resources. Our motive will never be entirely disinterested, for we naturally hope that of the increased expenditure a goodly portion will be expended on us. Business is business, and I do not for a moment pretend that interference on our part should be represented to be purely philanthropic.

One section of our task is, therefore, to help China to develop her own riches. Under this head I would group improvement of communications by railways, steamers, and roads; the opening of mines (most metals and minerals are to be found in China); the sinking of petroleum wells, and other enterprises of a similar kind, which can be facilitated and extended by the use of Western machinery and capital. From the vast number of concessions in various provinces recently applied for by Europeans, it is clear that the profit awaiting concessionaires has already been foreseen.

But all this will be of no avail until there has been one reformation, which will have to go very deep indeed. In an article contributed to the *Revue des deux Mondes* by a Frenchman who had recently visited Peking, the writer ascribed the decadence of China to one cause above all—the mandarinat. This I hold to be essentially the case. Before China can make any real advance, the whole machinery of Government will have to be recast. I see in this no impossibility. I have heard it argued that it is impossible to instil into the mind of the Chinese official a sense of what we understand by honesty. I do not think this sweeping indictment of the Chinese character is true. It is, perhaps, a fact that there can hardly be found one honest official from one end of the Empire to the other, but I should ascribe this lamentable circumstance rather to the system than to the men. On the other hand, if I were to be asked whether I could repose more confidence in a native of Japan or of China, I would declare for the latter. What happened, when Europeans were turned out of Canton at the time of the Opium War, was typical of the Chinese man of business, the class with which the European comes most in contact. It is matter of history that the Chinese then showed the most sterling honesty under trying circumstances. The Chinese is an honest man, unless placed in



a position where honesty is practically impossible. This, I consider, is the case with the official, and is the outcome of the system. He labours under every imaginable disadvantage. In the first place, in spite of their boasted competitive examinations, it is hard for a Chinese to get into office at all—impossible without a considerable preliminary expenditure, which hampers the official throughout his career. The purchase regulations, which at one time governed advancement in our army, compare favourably with the practice prevailing in every branch of the public service in China. Moreover, the career is short in itself; every step means an additional outlay, and there is a certain prospect of being fleeced at its termination. It is a case of Swift's fleas over again. The higher preys on the lower, and, as with those fleas, the process goes on *ad infinitum*. One peculiarity of the Chinese civil service I will specify. All grades have fixed rates of salary, but to each post is assigned, in addition, a still larger sum, called in the Chinese language "yang lien yin," which signifies "money to foster integrity." Now, an official habitually refrains from drawing his salary. They are so paltry in amount, and he is besides so constantly liable to be mulcted in the way of fines and the like, that he leaves his salary to meet such outgoings and lives on his "integrity money" (which has also been called "anti-extortion allowance"). Even this is not excessive in amount. The Viceroy of Chihli, the post held by Li Hung-chang, draws under this head about £2,000 a year. Yet Li Hung-chang is said to be the richest man in the world.

This is not a hopeful picture; but we are not so long out of a glass house that we can afford to throw stones. Corruption in official circles was not, even with us, unknown at the end of last century. We have improved ourselves out of it, and I do not see that we need despair of reformation even here. So long as the servant of the Chinese Government sees that, if he is to make any hay, he has to do it while the sun is shining; and is, moreover, aware that the sun will not remain shining for any length of time; that, in addition, he will eventually have to surrender a good part of the hay he has succeeded in making—so long will the administration remain what it is and the country continue in its present condition of collapse. The financial reform will have to be wholesale. It must begin at the extreme top and must penetrate to the very bottom. There should be for every province a budget, with a general budget for the whole Empire, which shall contain estimates of receipts and disbursements. There should be allotted an adequate salary for every functionary, and with it a stern prohibition of pickings and perquisites. The secure tenure of office is essential, and a system of pensions as prospective rewards for worthy service, framed on such a scale that the anticipation of their provision would more than counterbalance temptation to pecu-

lation. Opportunity to embezzle should be abolished, and detected malversation should entail exemplary punishment.

This is an outline of what China requires; and there is nothing in the character of the people to render its attainment impossible. Intelligent economy in all departments, combined with a judicious liberality, where liberality seems called for, will do much to rehabilitate China's financial condition. But the foremost requirement of the scheme is that all must be done under European supervision. The Chinese is an excellent servant or follower, but makes a poor show as a master, and has not it in him to figure as a leader.

The reformation of China on the lines above indicated is a gigantic task, but not impracticable. The transformation would not be more sweeping than that which took place when England became Protestant; and that did not take long to effect. It may be objected that there was that in the English character which made the transition easy—a latent independence of thought which predisposed us to the change. I think this is so; but I consider there is a similar predisposing cause in the Chinese. His character is a homogeneous one, and varies little whatever the latitude. Of the 300 millions (whatever the exact number may be) there are 299,900,000 who resemble one another in the most astonishing way. To the new arrival it is impossible to tell them apart. They have, every one, the same hair and eyes; there is not a handsome face among them nor, in the same province, is there much difference to be noticed in their stature. They all seem to be machine-made and, like Waltham watches, to have interchangeable parts. It is only after some years' residence that the European begins to be able to discriminate. If the Chinese is found to be honest in one place, he is probably honest throughout; and since China is really the most democratic of countries, if the average native is honest, the official (who is drawn from the same class) is probably honest too at heart, though he is often the reverse, being the victim of his environment. The Chinese are, moreover, reputed to be the easiest governed in the world. He is admittedly industrious and painstaking to the highest degree. If he has one patent defect it is that he cannot initiate, cannot invent, cannot lead. But he can imitate, he can adapt, he can obey. Show him a material model to copy; he will produce an exact replica. Show him a moral example to follow; I believe that he will plant his steps in the footsteps that he is called on to take as a guide, and will not deviate a hair's breadth, and will benefit thereby as did the page of St. Wenceslas.

If this can be done by any one it can be done by us, and it is to the interest of England that it should be undertaken. This is the panacea I speak of in my title. It is of the nature of a tonic—bitter, perhaps, to the patient's self-love, but salu-

tary. It may be apprehended by some that China, restored to health and strength, might be tempted to turn and rend her physician. But the day when the Middle Kingdom arrogated to herself the position of the "Hub of the Universe" is past, in my opinion, for ever. China shows unmistakeable signs of being ready to take her place humbly at the feet of any country which is willing to be her guide, philosopher, and friend.

---

## APPENDIX

There having been some doubt expressed as to the exact meaning of the phrase "Yangtsze Valley," I append a letter addressed by me to the *North China Daily News* in which the question is discussed.

*To the Editor of the North China Daily News.*

Sir,—A letter has appeared in the *Times*, over the signature of "Forewarned," in which it is stated that the name "Yangtsze kiang" is applicable to the river usually so called only from its mouth to a little above Nankow; and it is inferred that the phrase "Yangtsze Valley," as used in Sir Claude Macdonald's now historical note to the Tsungli Yamen, is inadequate as a definition of Great Britain's intended sphere of influence, whether in the eyes of China or in those of Foreign Powers.

To a certain extent, this is true; to a certain extent, it is not. Where in the note the English words, "The Yangtsze Valley," are used, they are sufficient for the Chinese Government or for any Foreign Power. It is the English text that is binding on this country in such documents; and for any other nation to pretend that these words signify anything less than they naturally mean to any European, would be mere academic quibbling to which very little weight would be given in the arena of practical politics.

The fact is that the words "Yangtsze kiang" mean one thing to the Chinese and something different to the European. On consulting a map of the Empire it will be noticed that the Yangtsze (as we think of it) and the Yellow River rise in Tartary at points not very widely separated; that each on its way east describes a great curve, the one to the south and the other to the north; and that when they at last fall into the sea, the region enclosed between them comprises the greater part of China. When the Yellow River debouched to the south of the Shantung Promontory, it was really a singular circumstance that rivers, starting so close together and then diverging so widely, should converge so remarkably at the end of their careers. But the main point to which I would direct attention is this: That, from a native point of view, the Yangtsze does not rise where we consider it does. The "Times Atlas" places its source in a lake, called "Montcalm," in Harashan; in Williams' map (which appears to be more in agreement with Chinese atlases), it



risers in the north of Anterior Thibet. On the theory that the source of a river is the point from which its waters flow which lies farthest from its mouth, the source of the Yangtsze is as located by Western geographers. But the above rule is not invariable; the chief name a river bears is not always applied to it throughout. On such a theory there ought to be no Missouri. Perhaps we are strictly required to allow the inhabitants of China to let their rivers be deemed to rise where the natives of the country choose. In that case the Yangtsze is not so long a river as is generally supposed; for the Min river, which branches off at Hsü-chou Fu in Szechuen, is considered by the Chinese to be the main stream, while the Kinsha (the "River of Golden Sand") is a mere tributary. The Min rises in North Szechuen, and is comparatively brief. However, if we insist on choosing our own locality for the source and on calling the river Yangtsze for its greatest possible length, then we have to go either to Thibet or to Harashar. It bears many names on its course to the sea. At its source it is the Kachi-uran; on its passage through Kokonor, the Murus-usu; thence, as far as Ya-chou Fu (in Szechuen), the Fu-tieh-chu; from Ya-chou Fu to Hsü-chou Fu (also in Szechuen), the Kinsha; from that point to the sea, the Ta (or Ch'ang) Kiang, *i.e.*, the Great, or, the Long River. Its general name is Kiang, *i.e.*, The River, *par excellence*. The Yangtsze and the Yellow River are the two great waterways of China. The former is the Kiang and the latter the Ho, but both words now-a-days mean, by synecdoche, rivers in general. Still, Kiang by itself is always the Yangtsze and Ho by itself always the Yellow River.

"Forewarned" is, therefore, not quite accurate. "Yangtsze Kiang," as a foreign term, is certainly applicable (towards the Chinese) as far as the Ta Kiang extends, which is to Hsü-chou Fu, well into the heart of Szechuen and a long way above Chungking. As a Chinese term it may be called "popular" (corresponding to what botanists call "trivial"). It may be compared to the use in English of the words "Chinaman" and "pigtail." In official language neither is tolerated, but a "Chinese" and "queue" have to be substituted. Similarly, though I have never seen the text of the note, I am sure the Chinese Secretary of the Peking Legation never used the characters "Yang," "Tze," and "Kiang" when translating the phrase "Yangtsze Kiang." Even if he had thought of doing so, his native writer would have demurred to the words as not being correct Chinese.

But for Europeans the "Yangtsze Valley" seems exactly what it was intended to mean; though I admit that it would perhaps have been preferable to define it further by adding geographical boundaries.

In my opinion the Yangtsze Valley of British diplomacy runs to the borders of Thibet; I believe the Chinese Government so understood it; and any potential juggling with words on the part of a hypothetical inimical Power would be sophistical quibbling.

G. M. E. PLAYFAIR.

Ningpo, 9th November (9th December), 1898.

PORTUGAL, THE PORTUGUESE, AND THE VASCO DA GAMA  
CELEBRATION, 1898.

By MR. JOHN R. NEWBY.

[Portions addressed to the Society, in the Library, at various meetings.]



HER MAJESTY THE QUEEN OF PORTUGAL.

I HAVE on two occasions visited Portugal, the most westerly kingdom of Europe; once in the month of October, and my last visit was paid in May, 1898, when the Portuguese were commemorating the four hundredth anniversary of the discovery of the Cape route to India by that illustrious navigator, Vasco da Gama. On this latter visit I had the honour of representing the Manchester Geographical Society. The easiest way of reaching Portugal from the North of

England is by a steamship of the Pacific Steam Navigation Company, from Liverpool, and it was by one of the boats of this company that I travelled on my first visit—her name was the “Galicia.” The passengers left the landing-stage at Liverpool in a tender at ten o’clock, but I had got permission to come off in the mail tender which carries the letters, and leaves the stage at eleven o’clock. When we reached the “Galicia,” she was moving very quietly down the Mersey. In twenty minutes those for the shore had got on to the tender and leave-takings had been said, and our vessel was well started.

The “Galicia” is a fine vessel of 3,829 tons burden, the “City of Berlin,” in which vessel I crossed to the States, was 5,491; the arrangements on board were good, the saloon being about the centre of the boat. My state room was next to the bath-room, so that I had a very short distance to go for my tub in a morning. I found about seventy passengers on board, amongst whom were numbers of small children; these, with their parents, were going to Bordeaux by boat, and then on to Pau or Biarritz for the winter. A large number of persons visiting the South of France now travel there by the Pacific boats, and if people like the sea and can get a quiet passage, it is much pleasanter than going by train; it also saves the trouble of changing from train to boat, and is more economical. The majority of the passengers I soon found by their voices were unmistakable Scotch bodies, some travelling for their health, others for pleasure, and the remainder going out to Monte Video, Rio Janeiro, or Valparaiso, on business. The man who shared my state room was a native of Brechin. The first thing I asked him was if he suffered from sea-sickness, and very pleased I was to learn that he never did, though he said he often had severe headaches when the water was rough. He was a particularly nice fellow, who, through no fault of his own—as I learnt from others on board—had not succeeded in a business he had at Valparaiso, and he was now going out there again to start another establishment, leaving his wife and children in Scotland. He showed me several photographs of his little children.

On the Pacific boats they always have lunch about 12-30; eating is a matter of so much importance on a sea voyage that I may as well tell something about the commissariat on these boats. For lunch there is soup, cold meat and roast potatoes, sardines and cheese, with salad when not too far from land; the saloon was very well filled at this first meal. The sky was overcast and the day dull as we steamed out of the Mersey. There left at the same time as ourselves two transatlantic boats, one of the Cunard Line, and the other a National boat; the Cunard boat and ours kept close together to about the Skerries, near Holyhead, when she took a different course to the “Galicia.” We soon left the National boat a long way astern. The water was very quiet and smooth till we got opposite Holyhead, and I heard passengers expressing hopes, if not opinions, that it would be calm in the channel; however, so soon as we got round the corner and were steering south, the boat began to roll a good deal, and numbers retired below, not to appear again until we were in the river off Pauillac. One of the first persons I noticed when I came on board was a young cleric, taking charge of a milder looking youth than himself. These two were sitting on deck, drinking some antidote to sea-sickness out of a phial, the doses on which were



distinctly marked, and it was laughable to see how careful they were to take the exact dose. As I expected, these two were amongst the first to retire, and the cleric never came down to a single meal while I was on the boat. The chief officer on board was named Pepper, and I recognised him as having been officer on board the "Cotopaxi" (one of the Pacific line boats), on which boat I returned from Bordeaux when I went through the Pyrenees. The captain's name was Massey, a Scotchman, a quiet, gentlemanly man, who had the reputation of being a very careful and cautious sailor. I chose a seat in the saloon near where I was told the second officer sat, but the officers had so much to attend to the first three days of the voyage that hardly any of them appeared at meal time, and my only near neighbour—so many were ill—was the purser's assistant, a young Welshman, who was making his first trip. There were two brothers named Parrott on board who were going out to South America, and they greatly amused us with recitations and stories, and were, in fact, the life of the boat. Two regular 'Arrys, from Sheffield—one of whom said he was a doctor, and the other a lawyer—had seats opposite to me, but they seldom appeared at meal times. At first they were very noisy, talked much, and never used a single "h." One of my fellow-passengers had made a fortune in Valparaiso as a plumber, and was returning to attend to his business. He gave me a great deal of interesting information about the towns in South America, and I was very glad to have met him. A man who knew all about him, said a trade like his was one of the best ways of making money in Valparaiso. Tradesmen there who did skilled work charged just what they pleased. A gentleman who came from somewhere in South Wales was travelling with his son for the health of the latter; they were going to make a tour of the world. The son, though 16, looked only 12, was a Clifton College boy, and very shrewd and clever; he was not ill, and I had long talks with him. He was an enthusiast about lawn tennis.

During the first afternoon it began to rain fast, and this continued more or less until we left Pauillac; it made the passage down the channel very dismal and disagreeable. We could see but little of the coast, and it was too wet to be out much upon the decks. The smoke-room was on deck, just in front of the engine-room, and I spent most of my time up there.

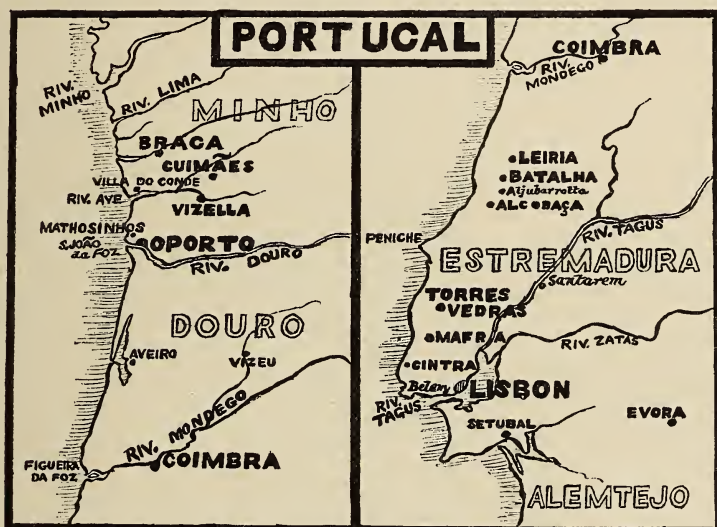
In the morning I had a cup of tea and a hard biscuit brought to me at 7-30, and at 8 I had my bath; the vessel was rolling about a good deal, as the sea was pretty rough. When on deck for my walk before breakfast I found it very misty, and no landmarks were to be seen; the barometer had fallen a good deal, which looked like wind. Very few passengers turned up to breakfast. They always commence with a soup on these boats, which they call *casula*—it is a sort of hodge-podge—then they have chops, Irish stew and steaks, marmalade, porridge, and jam. The service on board was very good, perhaps all the better because there were so few who came to their meals. The stewardess was the hardest-worked body on board, and I think they ought to have had more than one, seeing the large number of lady passengers and children. The seamen and stewards together numbered ninety-two. As the day wore on the sea got more rough, and at noon, when we sighted the Wolf lighthouse, we could see the water breaking

at times over the top of it, and a very grand sight it was. This light is off the extreme south-west point of the English coast, and it is necessary to sight it in order to keep clear of the Scilly Isles. We got little or no sleep at night, owing to the continued crashes of crockery and glass, and the excessive rolling of the boat. Several pounds' worth of things were smashed that night, and my mate's luggage was lying about our cabin in all sorts of positions. I had taken the precaution to wedge my portmanteau in between the washstand and my berth, and it could not get loose. There were not over a dozen people at breakfast on Friday morning, the weather continued as bad as before, wind and rain all day, making it impossible to walk on deck with comfort. They took down the awning, as it seemed probable it would get blown overboard. The boat rolled so much it was impossible to play cards, and I never spent a more wretched day on board a vessel. There was literally nothing to do but read, and the library on board seemed to consist almost entirely of scientific and religious works; there were few, if any, works of fiction. The sea got very high in the afternoon, when we were about half way across the Bay of Biscay, and it was a fine sight to see our boat ploughing her way along, and being chucked up and down by the waves just as if she were a mere fishing smack. During the afternoon the boats that hung outside the ship were swung inside, which showed rougher weather was expected. After dinner the wind was blowing a perfect hurricane, and the water was coming over the vessel, so that it was almost impossible to get from the saloon to the smoking-room, the only comfortable place, for down below the jingle of the glasses and things being thrown about was very annoying. I now had my wish of seeing a great storm at sea, and I have no desire to see another. Though it had no disagreeable effects of any sort on me, yet it makes everything on board very uncomfortable. Between eight and nine the captain turned the boat's nose to the wind and kept her in position till morning. If he had gone on his course, he said next day, most of the things would have been swept off the deck. I retired from the smoke-room early, as I remembered the deck smoke-room on the "Chimborazo" was the first thing that was swept overboard. When I got up on Saturday morning, after an almost sleepless night, owing to the rolling, I found the wind had abated and the sea was smoother. We anchored off Pauillac, 33 miles from the mouth of the River Gironde, and the Bordeaux passengers were taken up the river by a tender.

The rain poured down the whole of the time we were lying in the Gironde, off the small town of Pauillac, so that it was practically impossible for any of us to make an excursion into the country and visit the vineyards of the Château Lafitte, Medoc, Margaux, and St. Julien, though we were close to them. We heard the church bells on Sunday morning, and before they had ceased ringing we were slowly steaming down the most muddy of all rivers towards the sea. We met numerous vessels on their way to Bordeaux; most of these had been seriously damaged by the late storm; one—a Norwegian craft—had lost both her foremast and bowsprit; another large vessel lay stranded high up on the shore close to the mouth of the river. About three dozen of our passengers had disembarked at Pauillac, and only a third of this

number had come on board from Bordeaux. Some fresh meat and vegetables, as well as fish, were added to the ship's stores, so that there was no fear of our being put on short rations.

When we again reached the Bay, all signs of the late storm had disappeared, and we steamed quickly through the smooth sea, with a pleasant breeze helping our good vessel to make up for lost time. On Monday morning the water in my "tub" was perceptibly warmer; it came rushing in direct from the sea, and was of a bright emerald-green colour. It is curious to observe the various colours of sea water; in mid-Atlantic the water is as black as ink, in the Bay of Biscay it is of an indigo hue, while in the German Ocean it is ultramarine in colour. On reaching the deck for my walk before breakfast, I found we were passing close along the Northern Coast of Spain. The views of the various high hills formed a perfect panorama; these



SKETCH MAP.

By permission of Mr. E. W. Mellor.

mountains rise one behind the other, and the effects of the light and shade in the bright sunlight were so marked that they reminded me of the views on the journey from Bayonne past Pau, alongside the Pyrenees. The time passed by quickly, occupied, as we were, in playing either at cards or "Bull"; the latter is a sort of quoits, and consists of throwing leaden discs covered with canvas on to a board, on which there are fourteen squares, numbered consecutively from 1 to 12, with a couple of squares marked B, or Bull. If a quoit is landed in one of these two squares, the thrower loses all he had previously scored. Porpoises abounded, and from time to time raced alongside our boat, springing out of the bright water, and sparkling with all the colours of the rainbow in the clear sunlight. Whales too were to be seen spouting up water to a great height. All the passengers were now on deck; and, as is generally the case on a



large steamer, there were several most agreeable people to be found amongst them.

We passed round Cape Finisterre about noon, steering within half a mile of the shore. We were now in the regular highway for all vessels bound from the north to Gibraltar and the Cape, and we saw and hailed several steamers and sailing boats as we continued our course along the western coast of Portugal. We passed between the mainland and the Berlen Islands—a group of high sharp-pointed rocks, very picturesque in form, on the summit of the highest of which is a lighthouse. We still kept close to the coast, and by the help of my map I was able to make out most of the bays, headlands, and towns, in sight of which we passed. There were no high hills in view; the country looked brown and burnt up, though here and there the landscape was lighted up by bright green vineyards. Between two and three o'clock we were abreast of the small town of Mafra, noted for its quarries of coloured marble. We saw most distinctly the great palace and convent commenced in 1717 by King John V. It is 770 feet in length and four storeys high; at either end are two lofty towers. Some idea may be formed of its size from the fact that 10,000 men could be reviewed on the roof of the building; part of it is still used as a convent, and the remainder as an hospital. We next sighted a small village, the whitewashed walls and red-tiled roofs of which formed a pleasant contrast to the low-lying, barren country surrounding it. The sky was a lovely blue, with light fleecy clouds floating here and there, as we caught the first glimpse of the Estrella range of hills, the principal mountains of Portugal. On the extreme southern summit of this range—3,000 feet above sea level—stands the Palace of Cintra. The mountain, which is of granite formation, rises very rapidly from the sea coast; many of its peaks are sharply pointed, and the form generally is such as to get the maximum of grandeur out of the height. The sides of the hill are devoid of foliage or herbage, but the lights and shades caused by the numerous ravines were most picturesque. Perched on the highest point we saw the observatory of the palace, with its gilded dome. Passing round the Cabo da Roca (the Rock of Lisbon), a steep headland, we steered east towards the mouth of the Tagus, getting a good view of Cascaes, the Brighton of the Lisbon people. We next sighted Cape Espichel and the high land on the far side of the Tagus. Holland is noted for its numberless windmills, but there are more about Lisbon than are to be seen around the Zuider Zee; these are miniature windmills; some are used for irrigating the vineyards, and others for pressing the grapes. We stopped to take on board a Portuguese pilot, as the Tagus is a difficult river to navigate, owing to the shifting sands at its mouth. These, assisted by a ridge of rocks which was thrown up at the time of the earthquake in 1755, form a "bar" across the entrance to the stream; on one part of this stands a large lighthouse. After steering a circuitous course we got over the bar and were in sight of Lisbon. The natural situation of the town is very fine, built as it is on a succession of hills alongside the river. We saw it to great advantage as we slowly steamed up the Tagus with the sun in the west, it being about half-past four when we entered the river. Lisbon contains about 300,000 inhabitants, and lies on the northern side of the river, extending for over four miles

along its banks. The changing views of the various palaces, large churches and convents, as a traveller passes along the Tagus, give him a very good general idea of the size and character of the place. Stopping opposite the Tower of Belem, custom officers came on board, and shortly afterwards a boat came off from the quarantine station, on the southern side of the river, the occupants of which did not venture on board, but at a respectful distance subjected the ship's doctor to numerous inquiries as to where we had come from and the state of health of our passengers and crew. The chief inquirer persisted in speaking very bad English, and was very irate when the boat's officer translated a reply which had been given and could not be understood into Portuguese, shouting out "speak in English." After being thoroughly well roasted and chaffed, the officers expressed themselves satisfied as to our bill of health, and returned to the quarantine station. This consists of seven stone buildings standing together on an elevated plateau; these can accommodate 1,000 people. Passengers arriving by boat from the Brazils and other southern countries are lodged at the station for eight days, and have to pay 10s. a day for their keep, so much do the Portuguese fear the introduction into Lisbon of the yellow fever. An additional reason for detaining people in this large hotel is that the Government, having spent a considerable sum in erecting it, are wishful to make it pay as well as may be. Many persons arriving from the south by boat prefer to proceed to Bordeaux and return to Lisbon by train, thus they both save time and escape detention in the quarantine station.

We proceeded onwards up stream until we were nearly abreast of the Praça do Commercio (or "Blackhorse Square" as Englishmen call it), and there the anchor was dropped; we dined on board before landing, and soon after six those who were leaving the "Galicia" bid adieu to the friends who were proceeding further, and landed in small boats on the steps of the Alfandega (Custom House). Friendships are soon contracted on board a boat, and I parted with regret from many of those with whom I had so intimately associated during the past few days; we seemed to have known each other for a much longer period. I was sorry that time did not allow me to accompany them as far as Madeira, at which island the "Galicia" called. A few weeks' study of the language enabled me to pick up a smattering of Portuguese; and, assisted by this, I had no trouble in getting my portmanteau quickly passed through the Custom House, after which I got into a cab and drove to the Hotel Central, which fronts on to the river. I preferred this house to the Bragança Hotel, on account of the situation being more convenient, and because it was probable I should see more of the natives, and I had no reason to regret my choice. They gave me a good bedroom facing south, overlooking the river; my bed was in a sort of alcove, with a good sized room in front that served as a sitting-room. Many of our fellow-passengers who were proceeding further south came on shore to enjoy the luxury of sleeping in a bed. Some of them knew Lisbon well, and in company with one or two I strolled through the principal streets and squares in the bright moonlight. The sky was clear and cloudless, and the white stone churches and convents, on their elevated sites, stood out in grand relief.

Many have remarked on the smallness of the globe that we inhabit.

Never has the truth of this been better exemplified than in my own case at Lisbon. When I came down to breakfast, there sat at the breakfast-table a cousin of mine from London, who had that morning arrived by one of the Royal mail boats, having come over for a change of air and scene, so that it was an agreeable meeting for both of us. The Portuguese generally drink a cheap wine of the country called "Collares" at breakfast, finishing up with coffee. There are always plenty of grapes, pears, and other fruits on the table, and as John, the head waiter, could speak English very fairly, I had no difficulty in making a good start when I took my first meal in the country. This over, my cousin and myself set off to "loaf" through the town, taking the various objects of interest at haphazard as we came to them. By the aid of a map which I carried we were able to identify the various buildings. Either my knowledge of the pronunciation of Portuguese was very defective, or, as other travellers in the country have previously remarked, the Portuguese cannot understand a stranger unless he speaks very correctly, for I found the greatest difficulty in making myself understood at first. After a short time I caught the accent, which is a sort of sing-song, very like the tone in which the Swedes talk. My cousin knew not a word of the language, so that it was necessary for me to do the best I could with the aid of a "conversation book," which I always carried in my pocket. The worst of this method of progression is that the natives do not always give the same reply to inquiries as is to be found in the book. However, my limited knowledge of Portuguese was a source of great amusement to both my cousin and myself. However diffident one feels about uttering a word of a foreign language at home, when amongst foreigners most of us do not hesitate to string together successive nouns and adjectives, and trust to the foreigner making out what we are "driving at."

The beauties of the approach to Lisbon by water have never been better described than by Byron in "*Childe Harold*" (canto i.); and though the town is better governed, and the inhabitants are more orderly than they were in Byron's day, yet it must be allowed in the poorer parts of the place—

"The dingy denizens are reared in dirt."

Built as it is on a series of hills, Lisbon has an excellent natural drainage into the river, the principal streets are wide, well paved, and clean, but the numerous alleys and narrow courts abound in dirt and garbage, and here are to be seen crowds of gaunt, lean cats and dogs, the former mostly of a slaty blue colour, and the latter mongrels of the deepest dye. Both apparently act as scavengers of the lower parts of the town.

It was on the 17th of May, 1898, that I last left England for Lisbon; I sailed from Southampton in the Royal Mail s.s. "*Magdalena*"; the weather was quite chilly. Our first call was at Cherbourg, but of this place I saw nothing, as it was nearly dark when we stopped in the harbour to take up one or two passengers. There was very little sea in the Bay, and the air was warm and pleasant after we had passed Finisterre, and we had charming views of the coast of Corunna. The boat steamed up the beautiful Bay of Vigo, in Spain. We were



anchored off the town of Vigo for several hours, but we learnt no reliable war news, though natives came off with newspapers and skits about the "Hispano-Yanki Guerra," as the Spanish term it. There were numerous boats with bright-coloured fruits around our vessel, but the passengers who bought fruit said it was very tasteless. There were about fifty saloon passengers, half of whom were travelling to Lisbon. It was in the brightest and hottest weather that we slowly steamed up the Tagus and steered through the various vessels and war ships sent by nearly every country that possessed a navy. Spain was not represented. England sent the following battleships:—"Magnificent," "Prince George," "Repulse," "Mars," "Jupiter," and the "Resolution." There were Russian, Belgian, German, and Norwegian vessels, and all were gaily decked with flags, and from time to time salutes were fired. The River Tagus opposite the capital is a grand stream, and well fitted for such a spectacle. The heat was intense; even the natives said the weather was unusually hot for this time of the year. It was a tedious job getting to the Custom House. First we embarked on a tender and, as the water was too shallow for that to land us, we had to get into a small boat, and then we did not get our baggage for two or three hours. Every one at the rooms of the Lisbon Geographical Society—of which I was made a temporary member—was so excited and busy, and the building was so crowded with people—many of them country folks evidently—that I was unable to deliver my letters of introduction, and eventually I left my card for the secretary, and said I would wait at the Hotel International till I heard from him. About three o'clock a gentleman—who could speak a little English—named Abreu, called on me, and inquired what he could do for me. I went with him through the rooms, and he told me that the grand reception at the Society's premises—at which the King and Queen were to be present—would commence at half-past eight in the evening, and that he would send me a ticket. He bought for me in the street a ticket for the circus performance or bull-fight—as it is termed in England—and secured an open carriage drawn by two good horses for me, and instructed the driver, "Frederick," to take me to the "Praca de touros," and wait for me outside. The open arena—that is, open to the sky—is new, and is the handsomest I have ever seen in Spain or in this country. A truly gay sight it was to see the thousands of people, who nearly filled all the seats; the bright dresses of the ladies were most picturesque, and the afternoon was perfect. I had an excellent fauteuil in the shade. One of my fellow-passengers, named Lang—who represented the Scottish Geographical Society, and who had a seat on the stone steps below me—came up and talked to me. At five o'clock the King arrived and the performance commenced. It was just like the one I saw in 1880. At a quarter past five the Queen arrived, accompanied by her suite. Every one rose and cheered vociferously; she is evidently very popular. The horses were perfectly trained, and it was a pleasure to see them advance and retire, and then pirouette around the ring. At six o'clock the performance, which lasted until seven, had an interval, and I took the opportunity of leaving—found Frederick without difficulty, and drove about three and a half miles to my hotel, having an excellent view of the elaborate

and beautiful street decorations, part of which I had seen as I drove up from the Alfandega.

Bull fights in Lisbon are usually held for the benefit of charitable institutions. On my first visit, noticing one was advertised, the proceeds from which were to be distributed amongst the poor of the district, my cousin and myself secured seats in good time. There are four or five different charges for entrance. In addition to the boxes there are seats below named Lugares da Sombra (those in the shade) and Lugares do Sol (those in the sun). We chose two of the former, the charge for which was 500 reis, or 2s. each. The charges are not high; a box holding seven or eight people only costs about a sovereign. The performance was advertised to commence at a quarter to four. Reaching the Campo de Santa Anna, where it was held, about half-past three, we inspected the bulls in their pens. They were black, fine-looking beasts. The bill describing the performance was a very amusing affair. I have kept one as a fair specimen of the florid and extravagant language in which the Portuguese indulge when setting forth the attractions of a bull fight. The beasts are described as "14 bravissimos touros." The building where the fight takes place is very like that used for a circus in England; it has no covering overhead, around the inner circle is a passage four or five feet wide, beyond rows of seats one above another, and over these are two tiers of boxes. In a large box in the centre sits the manager or director. At the performance which we witnessed the horsemen were amateurs, a very poor band from one of the foundling hospitals occupied the orchestra; about four o'clock one of the band played a call on a cornet, the gates were thrown open, and into the arena came three cavaliers on horseback, dressed much as were our ancestors in the last century, in cocked hats, broad-tailed coats, breeches, and high boots; they were mounted on small but elegant horses, highly-trained animals that went through a series of evolutions, prancing forward and then backward in the circle, and approaching the box of the director, when the cavaliers made a graceful bow, afterwards they curvetted round the arena and their riders saluted various friends amongst the audience, who in turn greeted them, then the horsemen retired, and the capinhas—or men on foot—made their appearance, promenading round the circle, bowing to the audience. Their dress is a picturesque one, consisting of a short Spanish jacket richly embroidered, coloured velvet breeches, white stockings, thin shoes, and a red sash round the waist. Some of them carried a red or coloured cloth. After these preliminaries all retired, and the arena was left empty.

Shortly afterwards entered Signor Tinoco, on a fresh horse; he was the first of the "farpeados" to attack one of the bulls, and carried in his hand a wooden spear about three feet long, called a "farpa"; at the end of this is a small steel barb, and just above this barb are attached to the dart pieces of coloured paper or streamers. The capinhas placed themselves in front of the director's box, while the cavalier, mounted on his small but active well proportioned horse, took his stand immediately in the centre of the ring, facing the gates through which the first bull was to enter; the doors flew open, in rushed the bull, pawing the ground and bellowing furiously; there

was no mistake about it that he meant mischief; he was not long before he made a rush at his opponent, lowering his head as he charged. It is only when the beast is in this attitude that the bull fighters are allowed to attack him. The horseman making a skilful turn avoided the horns of the bull, and riding alongside him drove a dart into the animal's neck, amidst the great applause of the audience. The barb remained in the flesh along with about a foot of the dart covered with the streamers. These, when the bull tosses his head about, have an irritating effect. This first bull needed no stirring up by the men on foot, he was one of the most savage of the beasts that we saw. After two or three more darts had been planted in his neck in the manner previously described, he bellowed and rushed about in the wildest possible manner. The horns of all the beasts are tipped with pieces of wood covered with leather, so that they cannot tear the skin of the horses or gore them, and it is, we were told, an unusual event for a horse and man to be thrown over by one of the bulls. It occurred, however, on this occasion. The furious beast, waving his angry tail, made a plunge at Senor Tinoco, and succeeded in pinning his horse against the side of the circus; over went man and horse. While the latter lay on the ground the cavalier started to his feet, and, seizing the horns of the bull, tried to throw the beast; this he failed to do. Eventually the footmen enticed the bull away by irritating him with red flags, and the horse was got on to his feet apparently none the worse, and led out of the ring by his master, the audience all the time shouting in a most excited manner. The doors leading to the pens are again thrown open, and in trotted seven or eight tame brown oxen with large bells round their necks. Running up to the bull, they surrounded him, and he accompanied them back again through the entrance to the pens, apparently pleased to enjoy a change of scene.

When the sport commenced some of the boxes and seats were empty. On looking round after the first encounter was concluded we saw few places unfilled. As Byron says in "*Childe Harold*"—

"No vacant space for lated wight is found;  
Here dons, grandees, but chiefly dames abound."

The poet's description of the fight at Cadiz is most true to life, only it must be borne in mind that in Portugal neither the bulls nor horses are killed, consequently both are far superior animals to those that enter the lists in Spain. Over the fronts of the boxes hung bright coloured shawls and scarves, a good foil to the dark faces of the *senhoras* who owned them. Altogether the sight, when we gazed around after the first excitement ceased, was a very picturesque one. The cavalier who had been thrown presented himself in front of a box with his arm in a sling and his face bound up, and received the cheers of his friends, but he did not again venture into the ring.

After a short interval two *bandarilhas*, men on foot with a couple of short darts in their hands, stationed themselves in the centre of the arena, the clarion sounded, and with a huge spring in bounded another bull. At first he stared about, then tore up the sand with his forefeet, waving his tail and bellowing. The footmen then attracted his attention. Lowering his head he rushed wildly at one



of them. Now is the moment when the bandarilha shows his skill; he leapt aside, and, as the bull shot by him, dexterously fixed the two darts he carried in the neck of the animal. These darts, like the spears, have streamers attached. If they do not sufficiently irritate the bull the capinhas approach and spread their red cloths in front of the animal. This is one of the most amusing parts of the entertainment. The bull rushes after these men on foot, and they, dropping their cloth, jump over the boarding at the side of the ring into the passage surrounding it. On three or four occasions the animals leapt over after them, and the capinhas had to jump back again as quickly as they could, the beast being driven round the passage into the ring again. These men need to be very active, or some of the bulls would assist them out of the ring. One bull caused some excitement by trying to force his way from the passage amongst the spectators, but this is practically impossible.

During one of the intervals we paid a visit to the beasts in their pens. There they stand, with the darts remaining in their hides; they are not taken out for some hours. After they are removed the wounds soon heal, and the animals are none the worse. The performances alternated. First a cavalier on horseback attacked a bull, and then two more men on foot. There was no more variety than was caused by the different temperaments of the animals. Some were shy, and needed urging into the ring with long poles; others seemed old hands, determined to get the ordeal over as soon as possible. We fancied one or two were trained, as the men with the cloths waved these in front of them, and seemed to bewilder and daze the beasts, who held their heads down and took no notice of the capinha, even when he knelt in front of them with his back to them. This performance was much applauded, and it was most laughable to see the way in which many of the audience showed their appreciation. They not only waved their hats, but many of them threw them into the ring; others threw the performers cigars, and one enthusiast was so excited that he actually pitched his "gamp" into the arena! It was no easy matter throwing the hats—many of them Sunday-go-to-meeting ones—back to their owners. After six or seven bulls had made their appearance a boy came round with a black board, on which was chalked some announcement that gave the greatest dissatisfaction. The people groaned, hissed, and hooted in a manner I have seldom heard. With some difficulty we ascertained that an amateur who had laid a wager that he would attack a particularly-ferocious bull had turned tail and would not appear. We were told ultimately that he was arrested for not having fulfilled his compact. He would be imprisoned for twenty-four hours. Such is the law in Lisbon. The people most stupidly refused to let the proceedings continue. The cavaliers came in and addressed the director, and very angry expostulations ensued, but all to no purpose; the footmen offered to proceed, but the excited audience refused to permit this, and howled as only Portuguese can howl. After about three-quarters of an hour had thus been wasted the spectators calmed down, and the second part was commenced. A very fierce bull rushed in; after the ordinary number of darts had been fixed in his hide, the attendants having opened the doors, in came the oxen; but the infuriated beast could not

be enticed out of the ring, nor would he be forced out by the men with long poles and ropes. Every man in the place was afraid of him; he was master of the situation, and held every one at defiance. For nearly an hour these attempts to get this beast out of the ring continued; the ladies meanwhile began to go home, the sun set and the short twilight commenced, so we thought it time to make tracks for the hotel. With this *contretemps* terminated the first bull-fight I ever witnessed; we were afterwards told the animal remained in the ring the whole night. The impression left on my mind after what I witnessed was that a bull-fight in Portugal is fair sport, and not more cruel than coursing, fox hunting, or pigeon shooting; it is certainly less inhuman than cock fighting, which till recently was one of the amusements of numbers of our own countrymen.

The young swells of Lisbon wear what look exactly like spurs; these appendages, however, have no rowels to them, and are only worn for the purpose of keeping the trousers off from the heels of the boots; the hose of the natives are very broad and nearly cover the boots, so these imitation spurs are of some use. The men of the upper class dress neither tastefully nor well; black frock coats and wide-awake hats are usually worn together, large open collars are quite *en règle*. Roast chestnuts can be bought in any street, and my cousin and myself more than once made our lunch off them and some of the ordinary wine of the country that we obtained in one of the small wine shops that abound in the city. Chatting with some of the wine-sellers, I picked up some of the language, and got much useful information about the manners and customs of the Portuguese.

The town has for more than a century past been well supplied with water, by means of an aqueduct commenced by King John V. about 1730, and completed in 1738. This work—one of the finest in Europe—brings the water into the place from springs situated several miles away. Some of the supply comes from Cintra. When we drove to that place we several times passed under the high, strongly-built arches which support the waterway. At the time the work was constructed skew bridges were not built, and where the arches cross the roads they are so constructed that they look at a short distance off like the ruins of some ecclesiastical buildings. Owing to the frequency of earthquakes the masonry is necessarily of a very solid character. The water flows into a large reservoir—called the Mai—from whence it is distributed through pipes to the various fountains before referred to. The Mai is a large stone building on one of the hills. On applying to see the interior the manager was kind enough to send a servant with us who explained the arrangements. We first entered a large hall in the centre of which the water is stored. The tank is over 20 feet deep, and contained about 15 feet of clear water which flowed in at one end, pouring down from the aqueduct over an artificial barrier of rocks. The vaulted roof is supported by four fine pillars. The interior of the hall when we visited it was charmingly cool and pleasant, and I longed to plunge into the clear blue water. From the top of the building we got an extensive view of the city and the river. The guns were being fired off at the castle, and from the shipping in the river, in honour of Queen Maria Pia, whose birthday it was; the atmosphere was so exceedingly clear that an unusually long time

seemed to elapse after we saw the puff of smoke from the cannons until the report reached our ears. Entering the aqueduct, which is about eight feet high and five feet broad, we walked along it for half a mile. The pathway is in the centre, and on either side are the channels for the water, nine inches broad, twelve inches deep, and semi-circular at the base. In one or two places our guide took out a stone, and we could see the houses and streets 200 feet down below us. There is a steady, uniform flow of water passing along the channels, and if there be too large a quantity coming in there is ample provision for letting it flow over the sides of the channels. The fluid looked very pure and clear, and was pleasant to drink. We inspected the contrivances for regulating the supply furnished to the different fountains, and so far as we could make out there is seldom, if ever, any lack of water in the town; the aqueduct in many parts crosses wide valleys. Along this portion there used to be on the exterior a causeway for the convenience of foot passengers. This was done away with some years ago in consequence of the number of robberies that took place there, the thieves often throwing their victims from the parapets.

The majority of the English residents live near the Rua Buenos Ayres. The Sunday we visited that street was very hot. On this account possibly there were few people about. Good schools for both boys and girls are plentiful; there are also several colleges. Surgery is taught at St. Joseph's Hospital. This building was formerly a convent, immediately adjoining one of the largest of the churches that was destroyed in the earthquake. Of the latter only part of the tower and the nave are now standing; it is a fine ruin and well worth visiting. There are on an average 900 patients in the hospital, everything was very clean and neat in the lofty whitewashed wards, and had the structure been originally intended for the purposes for which it is now used it could hardly have been better arranged. One of the students offered to take us round and show us the operating and dissecting rooms, but as the heat was very great we thought it better not to visit this portion of the building.

The Art Gallery on the ground floor of the suppressed Convent of S. Francisco is supported by an annual grant from the State; a poorer collection of so-called works of art I never saw, the attendant pointed out pictures said to be painted by Rubens, Raphael, Van Dyck, Michael Angelo, and Albert Durer, and maintained that they were originals, but I very much doubt if they are. The best paintings were some scripture subjects—"The Flight into Egypt," "Adoration of the Magi," and "Christ with the Doctors," by Gran Vasco, an artist who lived about the beginning of the sixteenth century. The heads of the figures are remarkably well drawn, and the colouring is good, but the grouping and general design are defective. The guide particularly drew our attention to a painting representing purgatory, and pointed out the figure of a lawyer who was not making upwards. His profession was depicted by the pen behind his ear. It was evidently an old joke of our attendant's to draw attention to this character, and I regretted that my limited acquaintance with the language did not well enable me to explain to him how much I appreciated the sarcasm of the artist. I could only show my feelings by subscribing



myself as "Advogado" on entering my name in the address book previous to quitting the gallery. Pottery is very cheap in Lisbon. There are several manufactories in the country, one of the chief houses is at Mafra. They make elegant water and other jars in brown porous ware. The price of these is ridiculously low; the ornaments made in imitation of Palissy ware are pretty, and by no means costly. The difficulty is to bring these things safely across the Bay. Floating baths are moored in the Tagus, and in the early morning numbers of people patronise them. The water did not look sufficiently clear to induce me to bathe in the stream. Every facility is offered for posting letters—red boxes hang at the doors of many of the shops and at the hotels, on which are stated the hours when collections are made. The streets are well lighted at nights, and the principal ones carefully swept and well watered during the day. The regulations regarding the construction of new buildings are strictly enforced. Before any walls are put up, builders are required to construct a complete wooden framework, which is ultimately tied in to the outer stone walls. These are of unusual thickness and solidity; by this means the authorities try to protect themselves from the disastrous consequences which have resulted on earthquakes taking place. In several parts of the town may be seen results of the great earthquake of 1755; large palaces remain just as they were left after that event, displaced timbers hanging from the walls, and huge stones that have fallen from above lying where they at that time dropped. In the cellars of some of these old palaces live families of squatters in a state of destitution and filth.

On attending at the rooms of the Geographical Society on the evening of the day on which I last arrived in Lisbon I was introduced to Señor Consiglieri (Directeur de la Société de Géographie), who showed me to a reserved seat in the eighth row, immediately in front of the thrones. I understand most of the Portuguese noblemen were present; the floor, the two galleries, and the staircase were crowded with an audience of between 3,000 and 4,000 people. I was amongst a number of military men, whose chests were covered with medals and jewels; the ladies were beautifully dressed, and altogether it was a sight such as I have never before seen, and shall never forget. Soon after nine the King and Queen and the King's mother and their suites arrived. The Queen is the best-tempered-looking lady I ever saw, very handsome, and beautifully dressed; she chatted with many ladies before taking her seat on the throne to the right of the King, who is 35 years old and very stout; his mother, who has auburn hair, sat on his left. A military man made the first speech, opening the proceedings, in Portuguese; most of the speeches—or, as the Lisbon papers next day termed them, "palavras"—were in French. So far as I could make out, speeches were made by representatives of most of the Continental Geographical Societies. Earl Dunraven made a capital speech in English, as representing the Royal Geographical Society; he had a glittering star on his coat. I was waiting to hear what the King would say, when the military man who had opened the meeting—after speaking to the King—shouted out, in stentorian tones, "Mr. Newby"; so, without a word of warning, I had to rise and talk to the assemblage. As near as I can remember I said: "May it please your Majesties,

your Excellencies, Ladies and Gentlemen,—The Geographical Society of Manchester (of which Society I have the honour to be the delegate) will thoroughly appreciate the great compliment that has been paid them to-night by your Majesties' command that I should address this large and important meeting; a gathering representative not only of the peers and people of Portugal, but also of the scientific associations of so many nationalities. I am requested by my Society to offer their hearty congratulations to the Geographical Society of Lisbon on the latter's acquisition of the handsome and commodious hall and building in which we have now met. The close connection that has so long existed between the nations of England and Portugal accounts, in a great measure, for the desire on the part of our nation to join with the Portuguese in paying honour—on this anniversary—to the energy and ability of Vasco de Gama and his comrades. An English traveller—the late Sir Richard Burton—in his translation of the '*Lusiad*' (the masterpiece of your greatest poet) has given all English-speaking people the opportunity of understanding the graphic accounts—by Camoens—of the sea voyages and discoveries of your great hero, which discoveries were made at a time when the products of India were—after a tedious and dangerous journey—landed at Venice, there to be distributed over Europe. When Lisbon supplanted Venice as the distributor, in Europe, of the wealth of the East, good services were rendered to the whole of Western Europe. The Earl of Dunraven, addressing you on behalf of our premier Geographical Society, has alluded to the fact that England has profited perhaps more than any other nation by the discoveries of the first European colonists of India—the Portuguese pioneers. No part of England has more benefited than Lancashire, and in Lancashire no city so much appreciates these discoveries as Manchester, whose Geographical Society I have the honour to represent. The citizens of Manchester—following in the footprints of the Portuguese—have, by means of a ship canal, converted their inland city into a seaport. I thank your Majesties, your Excellencies, ladies, and gentlemen, for your courtesy in listening to my remarks." The few words I said seemed to please their Majesties and the meeting, for they kindly applauded me when I sat down. The Portuguese do not applaud at all during speeches; most of the delegates read their speeches from manuscript, and some of them seemed too long. I was the last delegate to address the meeting—perhaps they had had enough! The King then spoke, sitting, and then the Royalties left a little before eleven. The Portuguese who I knew were profuse in their thanks to me, and my Scottish friend, Mr. Lang, said I did very well; and he thanked goodness it was I, and not he, who had been called upon. The day was not quite over, for my next door neighbours at the hotel were practising Tyrolean songs till two in the morning, and I enjoyed the music, as a change. I had an excellent room at the Avenida Palace Hotel overlooking the Principe Rua, and from my balcony I had a grand view of the processions and illuminations. I was offered a ticket (on the Geographical boat) to see the Naval Review, but my head will not stand the noise of many cannon firing, and I resolved to rest after yesterday's work! It was intensely hot in the streets; too hot, till afternoon, for me to stroll about taking photographs. I was fortunate to find a cool room in the

Society's hall in which to write. Hundreds of people—nearly all, evidently, from the country—were going through the rooms inspecting the curios, etc., and they kept coming and asking me questions!

Amongst those who addressed the audience at the meeting of the Geographical Society were Count Brandis, one of the Austrian ministers; Dr. Monteiro (who represented the Geographical Society of Rio de Janeiro); Dr. Erodi, of Buda Pesth; and the delegates from the Societies of France and the Congo. The name of the present King of Portugal is Dom Carlos, or Charles I.; his mother is Maria Pia, the younger daughter of Victor Emmanuel, late King of Italy. Dom Carlos married in 1886 the Princess Marie Amélie de Bourbon, the



THE PROCESSION LEAVING ROCIO SQUARE.

eldest daughter of the Comte de Paris, and it is a singular occurrence that both the King and the Queen were born on the same day of the same month (September 28th)—the King in 1863, and the Queen in 1865.

Amongst the ecclesiastics present at the gathering was the Patriarch of Lisbon, and there were also several cardinals in red petticoats and lace. The King's brother—a military man—occupied one of the thrones. The King and the Queen have two sons, aged about twelve and eleven. The performance of the "Te Deum" in the cathedral church at Belem was a grand and solemn service, which lasted an



hour and a half; the church was crowded with people. On leaving the building I noticed the Queen kissed a ring on the hand of the Patriarch before holding out her hand for him to salute. By invitation of the Geographical Society I attended a performance at the Opera House (Dom Carlos Theatre) one evening; the play related to the travels of Vasco da Gama and his sailor brother, and lasted, I was afterwards told, until nearly two o'clock in the morning. I was present another evening at a grand ball given in the Geographical Society's hall; at this the Royalties were present—in fact, they attended at all the meetings. A space in front of the thrones was cleared, and here the dancers performed; the master of the ceremonies, who spoke English, was good enough to say he would find me a partner if I wished to join in.

The grand procession in honour of Vasco da Gama (*cortejo civico*), in May, 1898, was very well arranged; the day was charmingly fine, and there was a pleasant breeze. The whole of the people taking part in it passed along the *Principe Rua* in front of the room I occupied in the *Hôtel Internacional*, formerly the *Avenida Palace*. There were allegorical cars representing Vasco da Gama, Camoens, and other celebrated men of Portugal. The floral decorations throughout were excellent; the commercial associations of the country, the printing interests (including a huge figure of Gutenberg), the carpenters, engineers, and other trades and professions all sent representatives, as did the agriculturists and horticulturists. There were military and art exhibits, and last, but not least, came the president and officials of the Geographical Society. Here are two prints of photographs I made of the procession as it passed along the *Principe Rua*. The streets and avenues were illuminated each night during the fêtes, and very elaborate and effective were the illuminations; there were also displays of fireworks. It would take too much space to describe in detail the effects, but I quote an extract from the paper describing the brilliant scenes in some of the squares and streets:—

#### AS ILLUMINACÕES.

“Verdadeiramente surprehendentes as illuminações realizadas hontem. Difficilmente se pode tirar maisre sultado de bicos de gaz do que as commissões das ruas do Ouro, Augusta, da Prata e S. Nicolau tiraram nas illuminações que ali realisaram.

“Não so são realmente esplendidas essas illuminações, como são bastante variadas.

“Começam ellas, partindo do bairro Alto:—

“NA PRACA LUIZ DE CAMÕES.—Em volta da praça foram dispoosts em graciosas curvas renques de bicos de gaz, com pequenos globos azues e brancos, pousando de espaço a espaço em candeeiros como os da illuminação publica, sobre os quaes se vêm umas grandes pinhas de luzes em globos vermelhos. N’um dos lados da praça está o coreto onde hontem tocava a banda dos bombeiros. O effeito produzido pelas côres vivas dos globos era suave e magnifico.

“RUA GARRETT.—Nos candeeiros de illuminação publica, que já ali havia e entre os quaes collocaram muitos outros, foram postas duas calotes esphericas e n’ellas dispostos, artisticamente, bicos de gaz, com

globos azues, verdes, brancos e roxos. A distancia, o effeito é magnifico, parecendo existir sobre cada candieiro um brilhantissimo ramos de flôres. N'esta rua veem-se tambem brilhantemente illuminados o estabelecimento do bico Auer e o Club Tauromachico.

"RUA DO CARMO.—Posto que seja mimosa e de fino gosto, a illuminação d'esta rua é talvez um tanto pallida. Como na rua Garrett, aproveitaram os candieiros da illuminação publica, entre os quaes collocaram muitos outros e sobre elles foram postos muitos bicos de gaz formando serpentinas com bicos 'Aureo.' No principio e fim da rua



THE PROCESSION ENTERING THE AVENIDA DA LIBERDADE.

veem-se dois mastros tendo um no topo uma estrella e o outro uma esphera armilar. Os quatro mastros são cingidos por um renque de bicos de gaz em espiral até á extremidade superior."

In Lisbon the street cries are as numerous and shrill as those of London or New York; most of the hawkers belong to the gentler sex. The poorer classes are dependent on these hucksters for their supplies of vegetables, fuel, and fish, all of which articles the vendors carry about on their heads, cleverly balancing their stock in trade as they wend their way up the steep hills. The best looking of the

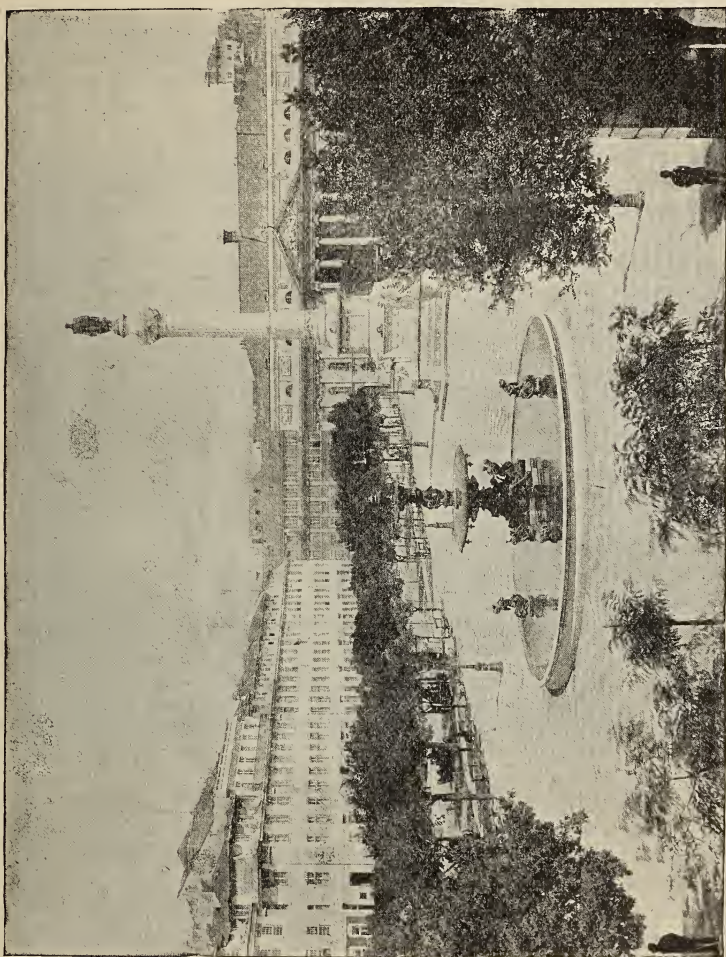
sex in Lisbon are the fish women; they are not true Portuguese, but come from Galicia, one of the most northerly of the Spanish Provinces. From the same part of the world come the Gallegos, who carry the water from the fountains scattered about the town to the houses. Both the fish women and the water carriers are decidedly Spanish in appearance, and their type of features contrast strongly with those of the true Portuguese, who are dark. Any one expecting to find amongst the inhabitants fine, dark, swarthy, handsome members of either sex, would be much disappointed; they are an undersized race, and their features are, as a rule, the reverse of handsome, if one can judge from the examples to be met with in their theatres, churches, and places of public resort, and at bull fights. Their military also are not men of great physique.

The Fish Market was very interesting; the women wear short woollen dresses, are most of them barefooted, and have large gold earrings and brooches, many of them of considerable value, and all of Moorish design, and from their heavy necklaces hang massive heart-shaped lockets. These are a sort of heirlooms, just as the golden head-gear of the peasantry of Scheveningen in Holland. The principal fish to be seen about was a sort of large sprat; this forms the staple food of the poorer part of the population. There were also soles, mullet—red and grey—bass, and hake. The sellers of all denominations always ask far more for their wares than they are willing to take, consequently a more than ordinary amount of bargaining and “cheapening” is carried on in the markets and shops. Coloured tiles form a noticeable feature in the buildings, many private residences are lined with them outside, and very clean and neat they look; these tiles are generally blue and white, and about seven inches square. The use of them thus exposed to the atmosphere shows that the town is not subject to frosts in the winter, if it were the tiles would crack and split off. In the convents, churches, and public buildings numbers of the staircases are lined with very old tiles made of Delft ware of most perfect tone and character. The designs on these are decidedly of Dutch origin; they represent scenes from biblical and secular history, the representations in many instances being five feet by three feet in size.

During my first stay in the town the temperature was about 80 deg. Fahrenheit in the middle of the day; the atmosphere was delightfully dry, so that though the sun shone brightly from morning to evening, the air never felt oppressive; it was always possible to find a shady side of a street, and only on one or two occasions was it too hot to enjoy sight seeing. If the broad streets were too warm I wandered along the alleys, where, as in the case of the Edinburgh wynds, the houses nearly meet overhead; in front of the whitewashed dwellings, on the balconies, hang gaudy-coloured garments, making as pretty a subject for a picture as one could wish to see, the younger part of the population, in bright red or green dresses and shawls, sitting on the doorsteps or playing in the street. The old wooden box stirrups are still used in Portugal, the cavalry are supplied with them, also the country people, who come riding into town on their mules; they are of practical service, as the mules are much given to lying down with their riders on their backs, and these stirrups prevent the foot



being crushed. The funeral carriages are in shape like a hansom cab, black in colour, with designs on them painted in yellow or gold. Inside sits the priest, accompanied by an acolyte or assistant, the former fully robed; in front of them is the coffin; the vehicle, drawn by one horse, is preceded by two mutes; there are no mourners. No better description of the coffins can be afforded than by saying they



VIEW OF THE PRAÇA DE DOM PEDRO IV., AT LISBON.  
By permission of Mr. E. W. Mellor.

are exactly like the old hair trunks that were so much in use years ago, and which have been supplanted by the modern portmanteau.

Lisbon is noted for its numerous handsome squares and fine gardens, well adorned with flowering trees and shrubs; the acacias and pimento trees flourish in the dry climate; the latter are very graceful in form, the boughs hanging over much in the same way as those

of the weeping willow, they are covered in the early autumn with large clusters of red berries. Black Horse Square is one of the grandest in Europe, being 585 feet by 536; it is so called by English people on account of the equestrian bronze statue in the centre, representing King Jose I., a monarch who actively aided in the rebuilding of the town after the great earthquake. During this earthquake the whole of the buildings standing on the site of the square disappeared, and no trace of them has since been met with. On one side the square faces the river, on the three other sides are lofty, well-designed buildings used by the Government officials, and below is an arcade. The Rua Augusta—one of the principal shopping streets—joins the northern side of this square; over the entrance is an arch, much like the Arc de Triomphe in Paris, elaborately ornamented with statues and carving. The Rocio Square, an extensive quadrangle in the centre of the town, is noted for the quaint way in which it is paved with black and white stones. This mosaic work is intended to represent the waves of the sea, and so successful has the designer been that after fixing the eyes on the paving for a short time every one feels convinced the surface is not level, but in ridges; the feeling when walking across this square is decidedly disagreeable. On the north side is the Donna Maria Theatre, with its handsome façade, and on the remaining sides are tall houses, characteristic of the general architecture of the place. High above, on a hill immediately adjoining, are the ruins of the Carmo, one of the oldest of the churches, with the piers and arches of the nave and part of the tower standing as they were left after the earthquake. The monastery attached to it is used for barracks. This picture, made from one of my sun-pictures, gives some idea of the exquisite beauties of the ruins, which remind me much of the remains of Tintern Abbey.

The Largo Pelourinho, at the back of the arsenal, is a small square, but worth visiting on account of the pelourinho, or pillar, erected in its centre. This twisted marble column, cut out of one block, was originally furnished with irons and spikes at the top for holding the heads of criminals who had suffered death; it answered to our pillory. In this square is the Camara—Town Hall; at the time of my first visit we were fortunate in being conducted through this building by one of the officials—the town clerk, I believe. The offices are lofty, and decorated with much taste; in the fire department were models of the latest inventions connected with fire engines and fire escapes; the weights and measures and water departments are in this building. The summit of the dome is 33 metres from the ground. We paid a visit to the worksheds, and inspected the carvings for the façade being executed by Italian and Portuguese artists, and very bold the designs were. Part of the decorations in the interior are composed of imitation marble, so like the real thing that the difference could only be detected by the touch; the process of manufacturing this was explained to us, and we were shown examples in all stages. Our attentive cicerone, who spoke French but no English, presented both my cousin and myself with a book containing a report, in Portuguese and French, about the new abbatoir in Lisbon; this was prepared for the Commissioners at the Paris Exhibition (1881). Wherever we went we met with the greatest



attention and politeness on the part of officials and attendants, all of whom seemed desirous that we, as strangers, should see as much as possible of their town and its institutions.

The Hotel Central overlooks the Praça dos Romulares, a square paved with a pattern of black and white stones, and used as a meeting-ground for sailors and shipping merchants; in the centre stands a statue of the Duque de Terceira, of military fame. The Campo de Santa Anna, a large gravelled space to the north of the town, surrounded with rows of trees, is the spot where the bull fights are held. The most charming of the remaining squares is that named after Camoens, the poet, called the Virgil of his country, and author of the *Lusiad* (1569); it stands at the end of the Chiado—the principal



RUINS OF THE CARMO CHURCH.

By permission of Mr. E. W. Mellor.

shopping street—is surrounded with pimento trees, and has in its centre a statue of the poet, the pedestal of which is decorated with carved figures representing the leading Portuguese authors. Praça means a square, and Largo a wide space; these terms are used indifferently, just as some streets are called Rua, and others Travessa, Beco (Alley), Calçada (Paved Street), or Terceiro (Parade), as fancy takes them. Different streets are devoted exclusively to particular trades; this arrangement used to be compulsory, and though such is no longer the case, all the shops in Rua Aurea (Gold Street) are occupied by goldsmiths, the tradespeople in Rua Augusta are clothiers, in the Rua da Conceição the silk mercers monopolise all the shops. The names at the ends of the streets are illegible and



want re-painting; different names are given to various parts of the same thoroughfare, and this makes it very difficult for strangers to find their way about, even with the aid of so good a plan of the town as that published by our English Society for the Diffusion of Useful Knowledge—much the best map of Lisbon that had been prepared at the time of my first visit. The names of many of the streets are ridiculously long, and the most elaborate are frequently given to the narrowest alleys; for instance, a stranger finds some difficulty in asking to be directed to Rua de Santo Antonio da Praça do Convento do Coraço de Jesus, or Travessa do Abaracamento da Cruz do Taboado, and these are really fair specimens of Lisbon street nomenclature.

At the gates of the city an octroi duty is levied on all eatables and manufactured goods brought within the gates. On the bridge spanning the stream at the Alcantara Gate is an old statue of St. John Nepomuc; in our wanderings my cousin and myself crossed this bridge, and strolling on through a suburb inhabited by the lower orders reached Belem, about four and a half miles from our hotel; entering a small public-house, I made my first attempt to make myself understood to those who could speak no other language than Portuguese. We succeeded in getting some "small beer" at a very reasonable cost, and then entered the noted church at Belem, the principal door of which was open. It was built of limestone early in the sixteenth century; the porch under which we passed is very elaborately ornamented, and contains over thirty statues. With the exception of the choir the architecture belongs to the Renaissance period, an expression applied to the revival of the classic style of art at the beginning of the sixteenth century under the patronage of the Medici and others; the pillars supporting the nave have the appearance of being too slight. There are no windows on the north and south sides, so that the interior is generally dark and gloomy; the best time to visit the church is about an hour before sunset, when the sun streaming in through the west window lights up the whole of the fine carving. The choir was erected at a much later date than the nave, and by comparison with the rest of the architecture looks tame and plain. There are several sarcophagi, containing the remains of Dom Manoel and other celebrated monarchs and their spouses. There are few cloisters in the world that equal those attached to this church; they are of marble, and the designs are Moorish; no two arches are alike, and all are worth careful examination; the carving seems as perfect as on the day when it was first cut. In the centre is a well-kept garden, stocked with flowering shrubs, aloes, and cacti. All was still as we wandered through these picturesque corridors; leaving them we heard sounds of many voices, and entering a long hall found some hundred boys just rising from table after a meal. With their hands crossed in front of them they chanted a monotonous grace, many of them thinking less of this than of the two strangers who were present; they dispersed, and then the cloisters were full of life and sound. The monastery is utilised as a foundling hospital; its kitchens are clean and well arranged, and the dormitories, with a row of beds on either side, covered with clean white counterpanes, are lofty and well ventilated. We visited the organ-loft of the church; there are two organs, and some well-carved old oak stalls, such as are to be seen in cathedral choirs.

One great feature of Lisbon is its public gardens; the Passeio Publico, near Rocio Square, is a fifth of a mile long, with handsome avenues of well-grown trees; in the summer time there are concerts here every evening, and at dusk the place is lighted up. The Alcantara Gardens, perched on one of the hillsides, are well stocked with endless varieties of pretty flowering shrubs and plants, some of which are shown in this print of one of my photographs. The geraniums here grow eight or ten feet high. From these gardens is obtained one of the best views of the city. The most extensive garden is the Passeio da Estrella, near the English quarter; in it are beautiful Brazilian pines,



IN THE ALCANTARA GARDENS.

wonderful creepers, and plants that will flourish only in a warm climate. There are also botanical gardens. Lisbon was one of the first continental towns that adopted the tramcar system; the rails are neither so substantial nor so well laid as those now being put down, but the cars are pleasant to travel in, being open like those in the United States. Cabs are numerous, and, though old-fashioned in shape, are comfortable to ride in; they are drawn by a couple of horses or mules, to whose wants the drivers are very attentive, often feeding them with carrots and other vegetables. To all appearances no society for the protection of animals is needed in Lisbon. Mules are used in most of the cars, also for carrying loads about the town.

Portugal is behind the rest of the world in matters agricultural. The carts and wagons are such as are seen in pictures two or three hundred years old; they consist of four or five boards resting on a couple of supports, the lower sides of which are grooved where they rest on the axle. To protect the contents of the vehicle there are four upright poles; the centre board comes forward and forms a pole, to which the oxen are yoked neck to neck. The wheels, surrounded with an iron tyre, are cut out of a solid block of wood; they never seem to have grease applied to them, and a succession of loud shrieks accompanies each cart as it crawls slowly along drawn by two oxen; these are of a light bay colour, and as a rule very handsome well-bred beasts with wide spreading horns. The implements employed in the fields and gardens are most primitive, the principal is a broad, heavy hoe, which is used for the work we should perform with a spade; it is fixed at an acute angle on a long handle; the labourers get over a good deal of ground in a short time, but the soil is not so well turned over as it would be with a spade. The ploughshare is, as original in form as it possibly can be, and is drawn by a couple of oxen. Old-fashioned water-wheels are plentiful; oxen are employed in working them, going round and round a circular yard, generally overshadowed with vines. The pump consists of an endless chain, on which are fixed earthenware pots or buckets about a foot apart; these dip into the well. A good deal of water is, of course, spilt in bringing it to the surface.

The town of Lisbon is now a clean one; very little coal, or, in fact, fuel, is consumed, and the houses being generally painted white inside, the effect is pleasing and bright. The only vermin I have seen there are cockroaches. The cooking at the hotels is mainly French; spinach and French beans were cooked to perfection. The following menu will show the sort of dinner they serve:—

POTAGE:  
Pates d'Italie.  
HORS-D'ŒUVRE:  
Fritot do cervelle.  
POISSON.  
Herlinhe.  
ENTREES:  
Roast beef aux epinards.  
Cotelettes do mouton and tomatoes.  
ROTI:  
Poulets.  
SALADE:  
Do, Laitue.  
LEGUMES:  
Macaroni au Gratin.  
ENTREMETS:  
Pouding au citron.  
Flan dos pommes a l'Anglaise.  
FROMAGES:  
Fruits et dessert.

They mix up the language on these menus; "herlinhe" is sole, so far as I remember. There are always plenty of olives on the table; they are very dark, and much smaller than Spanish olives, but have a very agreeable flavour.



The Portuguese keep a large military force in Lisbon. Soldiers are to be seen about in all parts, guarding the monuments and public buildings; they are evidently well drilled, though small and slight in stature. The citadel, or castle, on apparently the highest of the hills forming the site of the town, commands an extensive view of the place and of the river. It encloses a large area occupied by the officers and privates; the guns are fired most days of the week, and on the Queen's birthday there is quite an ovation. Adjoining is the Alfama, or oldest part of the town; the streets here are very narrow and quaint. The fountains are most picturesque, surrounded by the water carriers in their many-coloured, gaudy dresses, waiting their turn to fill their casks; when filled they put them on one shoulder, holding them by an iron handle. When we visited the police courts the business was just concluded; many of the gentler sex there were evidently country women, and had a far more Spanish cast of face than the women usually seen in Lisbon.

The umbrella trade must be a profitable one in Portugal; not only do the well-to-do people habitually carry an umbrella, but a "gamp" is owned by all the poor people. The breaker of stones on the roadside enjoys his *otium cum dignitate* at mid-day under a bright blue or red umbrella; every small farmer riding to market carries one at his side, and the women who sit on the doorsteps, fanning the fire under the pipkins filled with chestnuts, are protected from the hot sun by a similar covering. In one of the markets I observed a man dressed in rags and tatters, parading up and down during a showery morning in Lisbon, holding above him a most excellent umbrella that made his attire look by contrast more seedy than it would otherwise have done; he was proud of that umbrella. Every man smokes in Portugal—cigars are cheap and fairly good—the lower classes generally smoke cigarettes. It is seldom you see any one smoking a pipe; when not smoking their cigarettes they put them behind one of their ears, in the same way that some people in England carry pens and pencils not in use. The currency of the country presents no difficulties to a stranger. Accounts are all kept in reis; the rei is an imaginary coin, 20 reis are worth rather more than one penny. A 10-reis piece, a copper coin, is the smallest one in ordinary use; the 40-reis piece, another copper coin worth about twopence, is a very weighty article, and a few of them drag the pocket down. The principal silver coin in circulation on the occasion of my first visit were the 500-reis piece, worth about two shillings and twopence, the 200-reis piece, and the 100 reis; these two latter look like shillings and sixpences. Some gold coins of the country were shown me, but they were seldom used; the English sovereign is the coin of this metal most frequently met with; it is a legal tender throughout Portugal, and is worth 4,500 reis. The Bank of Portugal issue notes. The sums charged in hotel bills, and prices marked on articles in the shops, look excessive at first to a stranger, but when it is remembered that 1,000 reis is less than four shillings and sixpence of our money one's views are modified. To enable any one to thoroughly appreciate Mark Twain's story in "The Innocents Abroad," the reader should visit Portugal. A Yankee went ashore at the island of St. Michael, in the Azores, and offered to entertain several of his fellow-travellers; they got an excellent

dinner at the hotel, and all went merrily until the reckoning came, when the entertainer was so horrified at the amount of the bill—so many thousand reis—that he threw all the dollars he had about him on to the table, and told his friends to return to the ship and leave him behind on the island; his equanimity was, however, restored, when the landlord returned the greater part of his money, and explained to him that a dollar represented about 1,000 reis.

The currency of Portugal has been in a most unsatisfactory state since the national bankruptcy of 1892; gold has altogether disappeared from circulation, and even silver coins are not common. The usual circulating medium is paper money; there are also the copper coins before named of 10 to 20 reis. The value of Portuguese money is nominally the same as that of France. Now (1899) the exchange is considerably against Portuguese money. An English sovereign will now buy six or seven milreis, though, as I previously mentioned, the nominal value is 4 milreis, 500 reis only.

During our wanderings on my first visit my cousin and myself found ourselves in front of a large castellated old building, the windows of which had strong bars in front of them; entering the courtyard we approached one of the apertures, and seeing a crowd of poverty-stricken, pale-faced men within we concluded the place was used as a lunatic asylum. The soldier who was keeping guard informed me, in reply to my inquiries, that we might not go inside; but the outstretched gaunt, lean arms, and haggard hands, with finger nails that looked like talons, made me wish to learn more about this stronghold, so, following a priest up to the entrance we squeezed our way in and heard the iron-barred gate close behind us. We failed to make the porter understand anything, so we strolled along a corridor till we reached a large hall, where we found two officials, one of whom spoke a little English, sufficient to let me know that we had found our way into the principal prison (Limœiro) of Lisbon; this official was very obliging, and said he would send a warder round the place with us. The building was formerly a palace, used in days gone by as the residence of the royal family. On the warder appearing we were taken into a large apartment in which were collected about twenty or thirty of the wildest looking criminals to be met with in any country. We felt some slight diffidence on entering at first. As soon as the door was opened the prisoners crowded round us, some saying "Give me a penny" and others calling out "Tabac"; our guide, however, made them stand back, and we walked round and saw the beds with their coverings fastened up against the walls of the room; there were tables and chairs, and several of the prisoners were engaged in playing cards. We had taken the precaution to light our pipes, otherwise the odours of the place would have prevented us from inspecting the arrangements. We went into at least a dozen rooms full of criminals, the majority of whom seemed as if they had been confined for a long time past. In only three or four instances did we see the prisoners engaged in work; one was employed making shoes, and one or two at carpenter's work; the whole of the remainder spent their time in idleness and playing cards—a system more calculated to encourage crime could not be conceived. It was a matter of much regret that I could not ascertain some particulars as to the offences for which the men were confined; in one room were two

light-haired young sailors, about eighteen or nineteen, pacing up and down arm in arm; we could tell by the name on their hats that they were Dutchmen, and we tried to converse with them; but they could talk no other language than their own and Portuguese, and my conversation book was so far defective that it contained no dialogue on prison life, and we could not tell why these young fellows were in durance vile, but it was pitiable to see them thrown amongst such a crowd of old gaol-birds. Our guide was determined to show us every hole and corner of the place; we had to pass through numerous barred doors, the explanation that we were English acting as an "open sesame," not one of the door-keepers hesitating to let us pass. At last we came to a doorway over which was painted "Quartos Particulares"; we thought this might be the quarters of murderers, but after mounting a series of steps we were soon undeceived. It was evident we were in the debtors' apartments. There, at the top of the building these poor men lived, with their wives and families, and their poultry; it was a regular "rookery." All the rooms were tenanted, and the inhabitants, on learning our nationality, crowded out of their apartments to salute us; very pleased and grateful they were for some small donations we made to the children. Most of the debtors' rooms overlooked the town and river, so that these poor people could see the bright sunshine on the hills though they were debarred from enjoying it; they could apparently wander about from room to room along the corridors. It was the only part of the prison in which we saw any women, as the members of that sex who are imprisoned for crime are kept in a separate building. We visited the infirmary, a clean, white-washed, lofty room; the head attendant there most politely took us round and pointed out the various arrangements. Our guide finished up by taking us into a dungeon very dimly lighted; we merely saw that it contained a crowd of human beings huddled together; so soon as the door was opened our olfactory nerves were sensibly affected, and we beat a rapid retreat upstairs, to the great amusement of the doorkeeper. Glad as we were to have seen this singular prison, we were not sorry to again get into the open air, and breathe a purer atmosphere.

Lisbon abounds in churches, all of them apparently—with the exception of the English one—being Roman Catholic; at one time or other in our wanderings we entered most of them, but they were so similar in their architecture and appointments, that I will only describe what is to be seen in those best worth visiting. The Cathedral is by no means the most handsome of the ecclesiastical buildings; outside the design is plain, the flying buttresses at the east end are the most noticeable feature; the building, which was much injured in the great earthquake, has been added to from time to time, so that it is a jumble of architectural designs. During the week the only worshippers to be seen in the churches are beggars of both sexes; so soon as a stranger enters they rise from their devotions and pester him for alms. These beggars are a terrible nuisance in Lisbon; there seem to be no poor laws, and if a beggar enters a shop and solicits alms the shopkeeper interferes in no way. They have regular haunts; at one point in a street the same old man stands day and night plying his vocation, while at another part a small child always rushes out asking for charity in a



whining voice. Some of the people live and exist on begging. There are numerous paintings hung about the Cathedral and other churches, but with one or two exceptions I never saw worse daubs in any country; the earthquake, it is said, destroyed all the best works of art in Lisbon, and, judging from what is now to be seen, art never revived! In the Cathedral are some cleverly painted tiles lining the walls, they represent the bringing in a vessel from the Cape of the remains of St. Vincente; two ravens are depicted as accompanying the ship, one at the stern and the other at the bows of the boat; according to the legend they attended the ship all the way to Lisbon. These birds figure in the arms of the city, and two ravens used to be kept in the cathedral cloisters; the vergers till recently told visitors they were the identical ones that came from the Cape in 1147! There were no ravens to be seen when we visited the cloisters. In all the churches there a great number of votive mementos hung up over the altars; most of these are designed in wax, and represent arms, legs, ears, and other portions of the form divine; they are presented by devotees who have been cured or derived benefits owing—as they think—to the prayers offered to some favourite saint. The offerings are so much alike, and there are so many of each sort, that it is doubtful whether donors could identify their own representative limbs; I fancy they would get “mixed,” as they say in the United States.

The Church of St. Vincente is in many respects the finest of the old churches. Its position is good, standing as it does on very high ground at the outskirts of the town; the west front is 100 feet in length and 147 feet high, and is approached by a long flight of steps, which gives additional height to the building. The most interesting portion is the crypt, containing the bodies of most of the past kings and queens of Portugal. I found an ancient verger, who in the course of conversation made many allusions to “reis”; these, I understood, referred to my familiar friends the coins of the kingdom; and, thinking he was trying to drive a bargain, I intimated to him that all would be right at the finish. He then let us enter a dark, sombre chamber, round which, on a raised shelf, were ranged rows of coffins covered with gorgeous velvet palls, and handed us a MS. book in English, giving in order the names of the various occupants of the trunks—for such they were in shape, though not covered with hair, as the commoner coffins previously described. It was a weird sight, the only light that penetrated into this resting-place of royalty coming through two or three small yellow glass windows, which gave a ghastly hue to all the gaudy paraphernalia heaped up on some of the coffins. To my mind recurred Ingoldsby’s lines:—

“I stepp’d with noiseless foot, as though the sound of mortal tread  
Might burst the bands of the dreamless sleep that wraps the mighty dead!”

The verger was not so deeply impressed; he insisted on our examining each relic, and reading aloud the description from the manuscripts, while we compared it with the silver plate which each bore. On my expressing a wish to look inside one of the trunks I was informed this was forbidden.

Near the Church of St. Vincente was an immense structure, used

for storing cannon balls and shells; it is a church, named St. Engracia, that never was completed. Over this roofless building I saw the bright blue sky, against which stood out the well-carved capitals; the walls are complete, and were intended to form the largest rotunda in the world. It is by far the finest I have seen, and it is referred to in a Portuguese proverb—"As endless as St. Engracia"—a saying applied to anything that is never likely to be finished. I thought at first the roof had fallen in during the earthquake, but on inquiry found that this is one of the few large buildings that was not injured. The Estrella Church—the dome of which is one of the most prominent objects in Lisbon—stands on a high hill near the English quarter; built at a much more recent date than the other churches I have mentioned, it is on a reduced scale a copy of St. Peter's at Rome. The west front is ornamented with many large statues of saints; the various coloured marbles with which the interior is adorned are not only very beautiful, but are good examples of the numerous sorts of stone that are quarried and worked in the country.

The Church of St. Roque is in the centre of the town; the decorations are for the most part very poor, but here is to be seen a wonderful shrine erected by King John V. When visiting the church he considered the chapel dedicated to his patron saint was very poorly decorated, so he determined to substitute for it one that cost more than any other that had ever been erected. He had the present shrine constructed in Rome; after mass had been celebrated in it by the Pope, it was taken to pieces, brought to Lisbon, and re-erected on the north side of St. Roque. It is always kept locked up, and a curtain shuts out the view of it from the nave. A verger admitted us into the shrine, and, throwing back the curtains, let the sunlight fall on the bright stones, jewels, and metals of which the chapel is composed. I never saw anything to equal this *chef d'œuvre*, the roof, the walls, and the pavement are constructed of mosaic work and fine marbles, on either side of the altar are grand pillars or columns of lapis lazuli, and in front of it stand two silver candelabra; over the altar is a picture representing the "Descent of the Holy Ghost," a copy of one of Raphael's works, and on the side walls are pictures—copies from old masters—of the Annunciation, and Baptism. These were by far the finest works of art in the town, and though from the ground they looked like oil paintings, when we mounted on some steps, and were on a level with them, we found they were done in most minute mosaic work; we could not have believed that such delicate tones and gradations of colour could have been produced by such a process had we not inspected them most carefully, and satisfied ourselves they were *bonâ fide* mosaics. The alabaster work is exquisite, and forms a pleasant contrast to the numerous bright-coloured stones and jewels with which the super-altar is adorned. The total cost of this small shrine was 14,000,000 crusados; I believe this coin is worth about two shillings, but it has never been my luck to handle a crusado. W. M. Thackeray, in his "Notes of a Journey from Cornhill to Grand Cairo," wrote:—"We did not see the mosaic work at St. Roche, the sacristan who guards it was in bed. It was veiled from our eyes in a side chapel by dirty damask curtains, which could not be removed except when the sacristan's toilette was done, and at the price of a dollar."

The English Church is a modern building; though it has no architectural pretensions, it is lofty and well ventilated. We attended the service there on Sunday; it was plain and simple, the congregation—consisting of about a hundred people—joining heartily in the singing of the hymns; the organ was played by a lady. The resident chaplain conducted the service the day we attended the church; we prayed in the Litany for the King of Portugal, as well as for the President of the United States. It seemed a pity that the few natives who were present had to sit on the benches at the back, while there were plenty of vacant sittings in the body of the church. The cemetery adjoining the church is a charming one, full of well-grown cypress trees and flowering shrubs; from the inscriptions on the graves it is evident that the majority of the people from our isles who settle in Portugal come from north of the Border; a large number of Scotch people are buried there. We saw the monument erected to the memory of Henry Fielding, the novelist, who died in Lisbon in 1754, in his forty-seventh year.

On our first application to be allowed to inspect the Arsenal we were refused admission; but on my explaining that we were English, we were not only permitted to enter, but no restriction was placed on our movements. This is a very extensive range of buildings, part of them being utilised as a marine school. It was very interesting inspecting the various machines, and particularly those used for sawing the wood required for the construction of the ships and boats. In addition to these, all the buoys, anchors, and ropes are manufactured in the Arsenal, and in the stores are stowed away a large stock of naval materials. The Alfandega—an imposing-looking building, two storeys in height—adjoins the Arsenal on the bank of the river. The city is noted for the number of its handsome palaces; we had not an opportunity of seeing the interior of these, as the royal family were in residence. In addition to these there are in the city and the suburbs many large quintas, or mansions belonging to the nobility and wealthy merchants; all of these have good gardens attached to them.

The Necessidades, where the King and Queen ordinarily reside—one of the largest palaces I ever saw—stands on a high hill, away from any other buildings, on the west side of the city, the architecture is of the plainest character. We were informed that this palace and the Ajuda—another of the King's residences—contained no works of art worth seeing. Visiting the Houses of Parliament, I was fortunate enough to meet with a most civil attendant who had been in England several times; he had nearly forgotten our language, but after talking to him a little it came back to him, as the Yankee said of the game of euchre when he played it in England. The Cortes meet in these houses about February in each year, and sit for three or four months. The Lower House is an airy, plain building; over the Speaker's chair is a portrait of the King. The chamber of the Upper House is admirably constructed, the seats being arranged in a semicircle; the walls are lined with varieties of beautiful marble, with carvings on them by Italian artists; there are also some exceedingly clever designs in wood by native artists. The acoustic arrangements are perfect. In the lofty, broad corridors adjoining the members meet to chat and



smoke, and there I saw busts of most of the leading politicians of the country.

In Lisbon policemen are numerous, and seemed always to go about in couples; they have little to occupy their attention, for the inhabitants are sober and orderly; I saw no drunkenness in the streets. After ten at night the thoroughfares are nearly empty, and I was, on my first trip, surprised to find the cafés so much less frequented than in most continental towns, possibly because the summer season was past. Though it was far from cold at nights all the natives wore thick overcoats and wraps round their necks, as though they feared the night air. The performances at the theatres and opera-house commence at eight or half-past. On my first visit I only went to one opera—"Il Trovatore." The house is a handsome one, erected in 1793, and named "Don Carlos," it contains one hundred and twenty boxes in five tiers, and is lighted by a single large chandelier suspended from the centre of the roof. The Government give £5,500 every year towards the cost of the management; the whole of the floor is seated with cane chairs partitioned off from one another, the charge for occupying one of these is about three shillings and sixpence; this is the most popular part of the house. The vestibules, where the audience smoke between the acts, are furnished with easy couches; the intervals are longer than at our opera-houses. The King frequently attends the opera; the evening I was there the late King's brother, a military-looking man, and commander-in-chief of the forces, occupied the royal box. The principal characters were well represented, but the singing in the minor parts was decidedly inferior. Both tragedy and comedy are painfully slow when one does not understand the language, and I only paid a short visit to one of the theatres, the *Trinidade*; the audience were convulsed with laughter at the puns and the jokes, and must have thought I was very dense and stupid for not appreciating the fun. The Theatre of Varieties, a sort of music-hall, was closed, as the summer season was over.

We strolled into the vestibule of a foundling hospital by chance; a pretty sight it was to see all the young mothers, each with a rosy-cheeked infant in her lap. They were applying for foundlings to nurse, and brought their own offsprings to show they were healthy matrons; when the babies crowed and the women smiled at seeing us amongst them, we felt rather out of place with nothing in our arms. There are many public washing places scattered about the city; there are large tanks of water, round which the washerwomen stand, behind them are shelves, a portion of which is appropriated to each person; all was very clean and orderly. On two occasions we saw members of the gentler sex successfully extracting vermin from the head of another lady, who, no doubt, in her turn would perform the same good office; one of these women, who was plying her occupation in a public square, did not seem at all abashed at my cousin and myself watching her at a respectful distance. Empty houses abounded in 1880, partly owing to a considerable rise having lately been made in the rates. We crossed the Tagus one afternoon, and paid a visit to Casillhas, a small town opposite Lisbon; the place itself is uninteresting, but in crossing an excellent view of the city is obtained.

On my first trip the unusual amount of exercise I took during the day made me disposed to spend the evenings quietly in the reading-

room at the hotel, rather than in visiting places of amusement; there were generally two or three Portuguese gentlemen sitting in this room during the evenings, and chatting and smoking with them I picked up much information about the institutions of the country and habits of the natives. Most of the people who follow commercial pursuits speak English fluently, and all of them expressed themselves much pleased to afford all possible information about their land. At a recent time so much was being written and said about "land tenure" in various countries, and particularly in Ireland, that it may interest readers to know what I learnt about the legislation on this subject in Portugal, one of the countries into which during the Middle Ages the feudal system was introduced. The spirit of this system still lives in many of the institutions. Previous to the year 1867 the tenure of the great bulk of the land was very similar to that known as "copyhold" in our country—that is, property, instead of being held absolutely free from all obligations, is held, by construction of law, at the will of a lord of some manor to which such lands belong; the common incidents of copyhold lands are fines, rents, heriots, forfeiture in certain events to the superior lord, and rights as to mines and minerals. The laws of succession and powers of testamentary disposition over property differ in almost all countries; for instance, in France a parent has only power to give away by will a part of his land equal to one child's share, the remainder goes by the law of that country amongst the children equally, and this accounts for the sub-division of land in France into such small holdings. According to Portuguese law only one-third of an owner's possessions can be disposed of by his will, the remaining two-thirds are distributed equally amongst his children. Much agrarian legislation took place in Portugal previous to 1867, but in that year the land laws were finally settled and defined by a civil code, which provided that the rent of all land held in a manner similar to our copyhold lands is to be fixed not by any old custom, but by mutual arrangement. Fines and payments on succession and alienation were done away with; the real estate, though hereditary, was not to be divided amongst the heirs, except with the consent of the lord. The worth of the property is to be ascertained by valuation, and its value in money distributed amongst the heirs of the deceased owner according to law; if they cannot agree as to the value, it is to be fixed by a legal tribunal. The heirs are to arrange amongst themselves which is to take the estate, and in case of dispute as to this the question is referred to the law courts; if none of the children wish to take the property it has to be sold and the proceeds divided equally amongst the heirs. In case of non-payment of rent, the lord may take steps to recover it as an ordinary debt, with interest, but he has no right to re-enter and take possession of the land; and he can only recover five years' arrears of rent. If the holder allows the property to get into so bad a condition that it falls below a value fixed by the code the landlord may re-enter without compensating the holder; the estate may be mortgaged without the consent of the lord, but the proportionate amount of the sum to be borrowed is fixed by the code, according to the value of the holding. The holder can alienate after giving due notice to the lord, who has what is termed a right of pre-emption—that is, the chance of buying before an outsider; the lord, if he

wants to part with his manorial or seignorial rights, has to give a similar notice to the holder who has a corresponding right of pre-emption. The virtual owner of the lands held under this tenure is, it will be seen, under very few obligations to his superior lord so long as he cultivates his land properly and without waste. Previous to the passing of the above code, lands such as I have described could be held for one or more lives, the choice of a successor to his estate being left to the holder, or fixed by some stipulation in the deed creating the estate, or else being in the discretion of the lord; now by law both lord and tenant are precluded from making any arrangement so limiting the devolution of the property; by this alteration in the law many estates of complicated tenure have been constituted simple copyhold estates, devolving as I have before described.

Portugal was at one time bounded by the Tagus, and extended as far north as the ocean; now this northernmost portion, known as Galicia, belongs to Spain, and some provinces south of the Tagus have been added to Portugal. Lisbon has been subject to many changes; taken by the Arabs in 716, it became important under the Moorish kings, from whom it was captured by Alfonso I. of Portugal in 1147; by Dom Manoel (Emmanuel) it was constituted the capital of the country. On the 10th of November, 1807, the Court fled to the Brazils, and on the 30th of that month the French entered the town and held it until 1808, when Wellington defeated them at Vimeira. On the death of Donna Maria II., in 1853, her husband, the King Consort, reigned until 1855, when he resigned in favour of his son, Dom Pedro V., who reigned until his death in 1861, when Dom Luis I., who was born in 1838, succeeded to the throne. In the following year he married, as before mentioned, Pia, daughter of the late King Victor Emmanuel II. of Italy. Carlos, the present King, was born in 1863. The government is a limited monarchy; the succession, which is hereditary, extending to both sexes; the authority of the Cortes or Parliament is so great that the power of the sovereign is little more than nominal; in criminal cases the proceedings are public, in civil matters the parties have the privilege of appointing an arbitrator, who is chosen from a society belonging to each city. I was repeatedly told that the course of law is more tedious and expensive than in any other country, the administration of justice is based on the Roman laws; in ecclesiastical matters the canon law is the recognised authority, the superior head of the clergy being the Patriarch of Lisbon, who is always a Cardinal.

The separation of the Brazils from Portugal, together with the loss of her Indian possessions, have greatly reduced the commerce of the country; since this separation a great disproportion has existed between the expenditure and income of the State, the latter being some years not equal to one-half of the former; the consequence has been the accumulation of a national debt of enormous magnitude for so poor a country. The chief attention of the Portuguese husbandman is directed to the production of those articles which find the best sale in foreign countries, or which are raised with the least labour; of the first sort is wine, which is produced chiefly in the northern provinces; of the last-named sort, chestnuts, almonds, oranges, lemons, citrons, onions, and garlic. I am glad to say they do not use the latter in their culinary preparations. In Lisbon there are manufactories of



arms, cordage, hats, chocolates, earthenware, tin, copper, lace, mats, soap, silk, and cottons, as well as distilleries, tanneries, sugar refineries, and iron foundries. The principal exports are wine, oil, cork, salt, and fruit, a great deal of the fruit being preserved and sent abroad in tins; the chief imports are manufactured goods, hardware, linen, shoes, and corn.

Byron's graphic description of Cintra's glorious Eden made me long to pay a visit to the place rendered famous by the convention signed in August, 1808, shortly after the battle of Vimeira, under which the French were permitted to quit the shores of Portugal in British ships. Coaches, at the time of my first visit to Portugal, ran twice a day from Lisbon to Cintra, a distance of about seventeen miles; now there is direct communication by rail between Lisbon and Cintra. As we did not care to stay a night at the place, my cousin and myself hired a carriage, which enabled us to spend more time at Cintra and return at whatever hour we pleased. A Welshman who was staying at the hotel accompanied us on this trip. Rising at half-past five, we disposed of some bread and butter and coffee which the hotel people had been good enough to have ready for us; the Portuguese are early risers. As we drove through the streets of Lisbon we saw numbers of people going to work and taking produce to the markets. There is an inland route to Cintra, and also one alongside the coast; we went by the former. The greater portion of the drive was neither interesting nor picturesque, the land was uncropped and the country looked very bare; here and there we came upon well-wooded and fertile valleys, the leaves on the trees were still green and fresh, having not then acquired autumnal tints. Passing out of the town by the St. Sebastian gate, where is an octroi station, we saw in the suburbs several well-built quintas with large trim gardens attached. Bemfica was the first village we came to, and here the driver stopped to get some water for his horses and something more potent for himself at a small wineshop; the places where wine is sold are distinguished by having a bush nailed up over the entrance, reminding one of the old saying that "Good wine needs no bush." The journey was enlivened by the presence of a fine dog of a nondescript breed belonging to our Jehu. I managed to converse a little with the driver, and learnt that our canine friend was very pleased to pay a visit to Cintra, otherwise I should have thought he would have preferred remaining amongst his town friends. Dogs abounded in all the villages through which we passed, and our companion had a very rough time *en route*, for his country brethren formed common cause against him; however, he avoided fighting, being apparently a quietly disposed quadruped. We saw many picturesque-looking orange groves and orchards; most of the fences were formed of aloes, the strong, prickly leaves of which make a perfectly impervious hedge; windmills were to be seen everywhere; we passed a couple of roadside crosses, and a large palace where Queen Carlota was once imprisoned. About three miles from Cintra we came in sight of the grand mountain on which stands the palace of Dom Fernando, the father of the late King Dom Luis. Prince Ferdinand of Saxe-Coburg Gotha (nephew of Leopold, King of the Belgians) in January, 1836, married Queen Maria da Gloria: their eldest son was Dom Pedro V., and his brother (Luis I.), on Pedro's decease, succeeded to the throne. I described

previously the view of this hill from the sea; on the inland side it is partly covered with fir and other trees; nestling below it, amongst beautiful woods, lies the charming small town of Cintra. We reached Nunes' Hotel about nine o'clock; they speak no English there, but we preferred patronising a thoroughly Portuguese house to stopping at Lawrence's, the hotel generally frequented by English people, and we had no reason to regret our choice. With the aid of my conversation book and pencil and paper, I got up an animated conversation with the waiter, who provided us with an excellent breakfast; we liked the red wine of the district, and appreciated the peaches, pears, grapes, and other fruit which always form part of a Portuguese meal. Before leaving Lisbon I had ascertained that Bartolomeo Gomes was the best man from whom to hire donkeys, and during breakfast, with the assistance of the waiter, I made a bargain on paper with Mr. Gomes as to what we were to pay for three donkeys and a guide. The view from the hotel windows into the well-wooded valley was extremely pretty; though the foliage had partly turned, all the leaves were still on the trees. Breakfast over, we mounted our steeds. I carried my stick, but had no need to use it, for better animals for going than the three we had secured I never met with. We had a jovial, energetic, and excellent guide, by name Julio Pedraza, and any one going to Cintra cannot do better than secure his services. I had got well posted as to what we were to see and the route we ought to take, and found my slight acquaintance with the language a great assistance, as, of course, our guide knew not a word of English. Ascending a steep path up the hillside we made for the *Castello da Penha* (Castle on the Hill). When a long way up the mountain we got a good view of the town below. It contains about 3,000 inhabitants. Most of the dwellings are villas, occupied during the summer months by merchants and others who have business in Lisbon; these houses are dotted about the woody sides of the hill. The morning was overcast and we soon got amongst the clouds; the landscape was seen to greater advantage than if there had been a cloudless sky; mounting higher we saw the fleecy vapours scudding along below us, now and again the clouds breaking and opening to our gaze the lands beneath. The view of the Castle perched on the uppermost crag above was very striking, and I was fortunate enough before leaving Lisbon to obtain a good photograph of the Castle and grounds, taken from below. On reaching the gate of the grounds we found a boy waiting to take us up to the house; dismounting from our steeds, we followed him through the gardens and shrubberies up to the drawbridge. The gardens are nicely laid out and well kept; the side of the hill up which we passed is of soft rock, in which are cut numberless paths and walks. Dom Fernando is good enough to permit visitors to go over the Castle and grounds without requiring them to obtain any ticket. The building, like so many large ones in and about Lisbon, was formerly used as a convent, and was erected by Dom Manoel. Dom Fernando purchased it when he retired from the throne, altered it with good taste, and now it has all the appearances of an old castle. The carving over some of the doorways is Moorish in character, and very elaborate; the front of the building is covered with glazed tiles of a blue and white pattern. We were unable to go over the house, as the family were at home.

The carvings in the chapel, by some Italian artist, are superb; the retabulo (reredos) is of transparent jasper, the design on it representing scenes from Our Lord's passion; round it are festoons of flowers delicately cut in alabaster, these are supported at either side on pillars of black jasper—a more chaste altar-piece I never saw.

From the tower we got an extensive view; on one side was the sea, to the south the mouth of the Tagus and the smoke of Lisbon; the country inland looked very brown and dry. The most prominent object was a statue, much larger than life size, of Vasco da Gama, placed on the summit of one of the peaks commanding a view of the mouth of the river, from which he set forth in 1497. Under Dom Manoel the Portuguese made exertions far beyond what could have been expected of a country of such inconsiderable extent. Bartolomeo Diaz, who sailed from Lisbon in 1486, discovered the southern extremity of Africa, a promontory he christened the Cape of Tempests, owing to the storms he encountered; Dom Manoel, however, changed the name to Cape of Good Hope. It was by orders of this last-named king that Vasco da Gama set off from the Tagus with three ships, having on board under 200 men; after passing the Cape and surmounting great difficulties, he succeeded in discovering the passage to the East Indies, a discovery little less important than that made five years previously by Columbus, the Genoese navigator. Vasco da Gama returned to Lisbon in 1499; the King received him with great magnificence, and created him Admiral of the Indies. In 1524, after having lived in repose for twenty years, he was appointed first Viceroy of India. He died soon after his arrival there. In 1558 his body was transported to Portugal, where Dom John III. caused the greatest honours to be paid to it. On my first visit I heard from the natives much of this great explorer, and saw many monuments and memorials erected to his memory. It was his conquests that form the subject of the "*Lusiad*" by Camoens, a work which was in 1878 translated into English by J. J. Aubertin, and more recently by Captain Burton, the well-known traveller. The church and monastery of Belem were erected as an expression of gratitude for the successful result of his expedition, on which voyage he embarked at the place where the church now stands.

Dom Fernando took great interest in his garden; I went through the hothouses and saw several beautiful varieties of plants and flowers, many of which were new to me. Leaving the grounds by a different gate to that by which we had entered, we mounted our "*bestas*," which Julio had in readiness, and for several miles rode across bleak and barren moorlands, affording some striking views of the higher peaks of the Estrella range; at length we came in sight of the Cork Convent, a quaint building perched all by itself on the side of one of the hills. The convent, now disused, consists of about twenty cells, burrowed in the rock and lined with cork, large quantities of which are obtained in the neighbourhood. The entrance to the cells is about three feet high, the interior of the cavities being about five feet square; I squeezed into one of them at the request of the old woman who acted as our guide, and concluded that unless the original inmates were undersized men they must have found these abodes very uncomfortable, though the cork lining kept them free from damp. The dining room is cut out of the rock. The Franciscans, who formerly lived here, used the stem



of a vine for their bell rope. In the small chapel were some poorly-carved tombstones and badly-executed paintings. Not far off we had pointed out to us a cavity in the rock where a celebrated hermit used to reside, as damp a spot as any recluse could have selected. In front of it is a stone, from which I copied the following inscription:—

“Hic Honorius vitam finivit,  
Et ideo cum Deo in cœlis revivit.”

After leaving the convent, where we regretted to find they kept no supply of the wine of the country, we rode for five or six more miles over a bleak moor, the monotony of the journey being relieved by what little fun and joking I could manage to carry on with our vivacious guide; he was very averse to my dismounting, and seemed to think that my wishing to do so implied distrust in my steed; walking was preferable to riding, as we were continually going up and down hills; so soon as I got off my donkey Julio took possession of my saddle, possibly to show how sure-footed the animal was. The hillside above Monserrate, overspread with moss-covered trees of different sorts, but principally cork trees, was a pleasing sight for our eyes after having for so long a time seen no foliage. The place formerly belonged to Mr. Beckford, and was purchased from him by Mr. Cook, the present owner, who was at home when we were there, but the lodge-keeper allowed us to enter the gardens. Mr. Cook is now known by his Portuguese title of Visconde Cook de Monserrate. I never saw more luxuriant shrubs and trees; the aloë-trees were in flower, some of the bloom was fully twenty feet high; the cork-trees, with their rough, wide-spreading boughs thickly covered with lichens of various sorts, were most picturesque; ferns and Oriental plants were flourishing in the open air, which felt quite warm and humid after the atmosphere on the higher ground; on a well-kept lawn in front of the house, which is of Moorish design, were planted tall Australian pines and fir-trees. It was a perfect Eden, and we enjoyed wandering through the grounds admiring the views of the hills and glens for over an hour. Returning to Cintra by the direct road we visited the Royal Palace, formerly the Alhambra of the Moorish kings; its architecture is mixed and very quaint; there are arabesque windows with slender shafts, and courtyards with fountains in them; entering the building we were conducted into the Magpie Saloon, a lofty room, the ceiling of which is painted all over with representations of magpies; in the beak of each bird is a label with the motto “*Por bem*” (“*For good*”); in one of its claws each bird holds a rose branch. Philippa of Lancaster, who married King John I. of Portugal, detected him kissing one of her maids, to whom he was at the same time handing a rose. In reply to the Queen’s indignant remonstrances, he said: “*E por bem, minha senhora,*” and, to silence the gossip of his Court, he ordered the room where this incident occurred to be closed for a while, and in the mean time had the ceiling painted in the manner described. On the dome-shaped roof of the Hall of Shields, built by Dom Manoel, are painted the arms of the principal Portuguese nobility, two blank spaces were pointed out to us, they were formerly occupied by the shields of two families who had assisted in the attempt to take the life of Dom José; he, therefore, had their arms erased. In the chamber where King Alfonso VI. was for many years confined, and

ultimately died, we noticed the brick floor quite worn away on one side by the wretched prisoner during his walks up and down the room. The kitchens were furnished with two conical chimneys, the echoes in which were most singular. There was a bath in one of the courtyards, and when the guide turned on the water it spouted out from innumerable small jets in the roof, side walls, and floor; here the monarchs used to enjoy their shower baths; now no one resides in the palace. After a thoroughly Portuguese meal at the hotel, we got into our coach about half-past six, and set off on our return to Lisbon, the ride being much enlivened by the society of a Frenchman who had missed the 'bus, and to whom we gave a "lift."

Certain formalities have to be gone through before any one is permitted to leave Portugal by boat. On the occasion of my first leaving the country I presented my passport, duly stamped, to the governor; having paid him a fee he granted me a permit to leave. Without the production of such a licence the steamboat company will not give a passenger his ticket; I believe the system is kept up for the sake of the fees. On the morning of the 21st of October, the day I first left Lisbon, I was awakened between six and seven o'clock by an earthquake; my bed was rocking, and the room moving from side to side; this lasted for about half a minute, the sensation, though most disagreeable, did not inspire me with much fear; however, I got up and found that not only in the hotel had things been thrown off the shelves, but throughout the town this quaking had been felt, and the people said it was a more than ordinarily severe shock—it was sufficiently marked to be noticed in the English papers. About noon I got on to the tender that took us to the "Cordillera," one of the Pacific Steam Navigation Company's boats, moored some miles down the Tagus. There were only half a dozen passengers joining the ship; on reaching it we found a lady and gentleman—strangers to each other—had disembarked to take up their residence in the quarantine station for some days. The "Cordillera" is a boat of 2,860 tons burden; the state cabins were very stuffy, owing to the bilge water having, during a storm the boat had met with, got amongst the cargo, which principally consisted of sugar and honey; several hundred casks of the latter had got broken up. As there were only a dozen passengers all told on the boat, there was no difficulty in my getting a cabin to myself. We had a good view of an international yacht race in the Tagus. Two English boats were competing, and one of them came in first; a gust of wind blew the mast and sails of the other over her side just as she was sailing past our steamer. It was pleasant to meet with Mons. Boulres, the French pilot who had come out with us in the "Galicia," on board the tender; he accompanied us home in order to pilot the boat up the Gironde. This jovial, fun-provoking man sat near me at meal times on the journey out, but owing to the weather being so rough I did not see much of him out of the saloon; he was an adept at twisting table napkins into dolls, flowers, birds, and various shapes, and was an excellent salad maker. It was about two o'clock in the afternoon when we got away; outside the bar was a great swell, so the boat rolled terribly; the clouds were thick, and prevented us getting a view of the hills about Cintra. The following morning there were fewer clouds about; but the rolling continued so long as we were running alongside of the west coast of

Portugal. About twelve hours after starting we rounded Cape Finisterre; then the sea was very quiet. We saw a large number of vessels, including an English man-of-war. The doctor of the boat, who had been making his first voyage to South America, showed me photographs of Rio Janeiro, Valparaiso, Lima, and other places he had lately visited; I had many pleasant chats with him and the other officers as to what they had seen and done since they left England some months before. Amongst the passengers was a Chilian gentleman and his bride; he was going to Paris to study painting, and had spent his spare time in making portraits of most of the officers; she was a pretty, pleasant body, but could speak very little English. A youthful Brazilian, bound for Glasgow, excited my pity as we got nearer home, for his clothing was of the thinnest description and ill-adapted to protect him from the cold winds and snow which we met with so soon as we got north of the English Channel. Our small party in the saloon were not a very lively lot, most of them wearied by a long sea voyage were longing to get on to *terra firma*. I spent most of my time reading, there being a very good library; the long voyage had done for the piano, such a tin kettle I have seldom heard; unfortunately, a lady on board, who had been a teacher in Lisbon, would persist, during the intervals when she was not suffering from *mal de mer*, in strumming on this instrument.

Securing a seat at the second officer's table, near Mons. Boulres, I felt sure of plenty of fun during meal times. The pilot fancied he spoke excellent English, and nothing offended him more than any one showing he differed from him in opinion on this point. When the steamer reaches her anchorage ground off Pauillac, in the Gironde, it is usual to fire a gun as a signal for dropping the anchor. Though the pilot is on the bridge with the captain, it is usual for the latter to give the order, but on one occasion Mons. Boulres, determined to air his English, shouted out in a loud voice, "Let go the gun and fire the anchor!" to the great amusement of every one on board. His seafaring similes were very ludicrous. Telling him of my ride at Cintra, he said he had recently been astride a donkey; "I did go up, and did go down, and nearly did get thrown on to my head," he said, with descriptive pantomime, "but I did get catch hold of the donkey's neck very fast, and did manage not to go ashore." The 23rd of October was a lovely, sunny autumn day, and we got excellent views of the mountains on the northern coast of Spain; after dark we saw several rockets being fired off as signals to us; we hove to, and fired guns and rockets in reply; after a while we discovered it was the sister vessel of our steamer, the "Patagonia," that was hailing us. The two vessels approached within a few yards of each other, and a very grand sight it was to see the two steamers, all lighted up, rolling about in the trough of the sea. There had been very little motion when we were steaming along, but when still we could perceive the heavy swell, the little boat that came off from the "Patagonia" pitched up and down like a cockle shell. We had been stopped that we might supply the other vessel with some machinery for her engines. It took about an hour and a half to look this up and get it into the boat; during this time we learnt the latest home news from the third officer who came on board; he flavoured it pretty highly, knowing no one could contradict him, particularly in the matter of Irish outrages. In the



pleasant temperature we were experiencing we could hardly realise that two days previously the "Patagonia" had been passing through storms of sleet and snow. Bidding our unexpected visitors at sea adieu we steamed onwards towards the French coast, and at breakfast time on Sunday morning were lying off Pauillac, where we took on board Mr. Owens, the English pilot, a most agreeable and well-informed man, and about half a dozen passengers. We sailed again about four o'clock. Passing close along the French coast we had on the Monday a good view of Belle Isle and Ushant. Numbers of small birds settled in the rigging. When taking my bath that morning I was told Mons. Boulres had caught two birds. Going on deck before breakfast I asked him where they were; he smiled blandly, and patting his lowest waistcoat button, replied, "Leetle birds are vara vara good"; he had not lost much time in testing the good qualities of these particular ones.

The morning of the 26th was a top coat colder than the previous day; the water, too, was much lower in temperature; rain and sleet poured down incessantly; there was no smoke-room, and the only dry place on deck was alongside the funnel. As the afternoon advanced the wind rose to a gale, and the waves ran very high. About eight o'clock at night we passed Holyhead and met a strong north-easter; it was a grand sight watching the waves break over the bows, we made very little way against the wind and sea. On the following morning when we awoke the ship was anchored in the Mersey. In an east wind that, notwithstanding extra wraps, pierced to one's bones, and a fine drizzle that shrouded everything in mist, the shivering passengers embarked on the tender, which carried them to the landing stage.

On one of my visits I left Lisbon and took the train to Leiria, a small town of between three and four thousand inhabitants, situate about 100 miles north of the capital, on the river Liz. Above the town is a steep hill on which are the ruins of a castle built by King Diniz; they reminded me much of the remains of the Château Gaillard, on the Seine, erected by Richard Cœur-de-Lion, above Le Petit Andelys. The first printing press in Portugal was set up at Leiria, in 1466. Travelling, as I did, from Lisbon to the northern boundary of Portugal I had every opportunity of noting the changes in the country, the crops, fruits, and the inhabitants. Like Spain, Portugal consists mainly of extensive plateaux intersected by mountains—continuations of the sierras of Spain—the only natural frontier of the country is formed by such short ranges as the Serra do Gerez on the north, and the Serra do Sao Namede on the south, the rest of the boundary between Portugal and Spain is unprotected. The great rivers of the country, the Tagus, Guadiana, and Douro, all flow into Portugal from Spain, but they are nowhere navigable outside the Portuguese frontier. The country also possesses a number of small rivers—always full of water and sometimes navigable; in Spain, on the other hand, the coast rivers are nothing but dry ravines during a great part of the year. This important advantage Portugal owes to the moisture provided by the Atlantic Ocean; its far-western situation has always tended to promote voyages of discovery, and commerce with dwellers on the other side of the Atlantic.

As I travelled along I noticed the sides of the railway embankments were covered with stone-crop, honeysuckle, and wild roses, and in the

ditches alongside the line the water-lily blossoms; there are numerous foxgloves, and the beautiful lady's thistle (*Carduus marianus*). The specimens of the heath tribe (*Erica*) are very varied and bright coloured. As to agriculture, wheat, maize, millet, rye, and beans are cultivated throughout the country; there is hardly a tree that does not produce some edible fruit, the most common are the vines, olives, figs, and oranges. No fish market in the world is richer than that of Lisbon. The salt procured in the great salt pans (*marinhas*) at Setubal, and on the Tagus near Lisbon, is some of the best in the



A FRUIT SELLER, LISBON.

world. Some parts of the country are most highly cultivated, notably the Province of Minho, the districts round Lisbon, and the vine-clad slopes of the Douro; at the same time many parts have been allowed to fall out of cultivation, and these now form an immense pasture for sheep and pigs. In the inhabitants, originally of Iberian and Celtic stock, the mixture of races is still very perceptible; in the south the Moorish type prevails, while the peasants in the northerly mountains not infrequently suggest a Germanic element; negroes and mulattoes are numerous in Lisbon, owing to the extensive colonial system of Portugal. The Portuguese are a far more humane people than the



Spanish, and are, as a rule, courteous in their bearing. Some survivals of the picturesque costumes of a bygone age are still preserved amongst the country folks; I saw many rich gold ornaments worn by the peasant women in the districts north of Oporto. The women who carry about fruits and vegetables for sale mostly carry them in a basket on the head. The most characteristic industry inherited from the Moors, and still carried on in Lisbon and Oporto, is the manufacture of porcelain tiles, not unlike the azulejos to be seen in Granada and Seville; latterly regular mosaic pictures and figures have been the fashion.



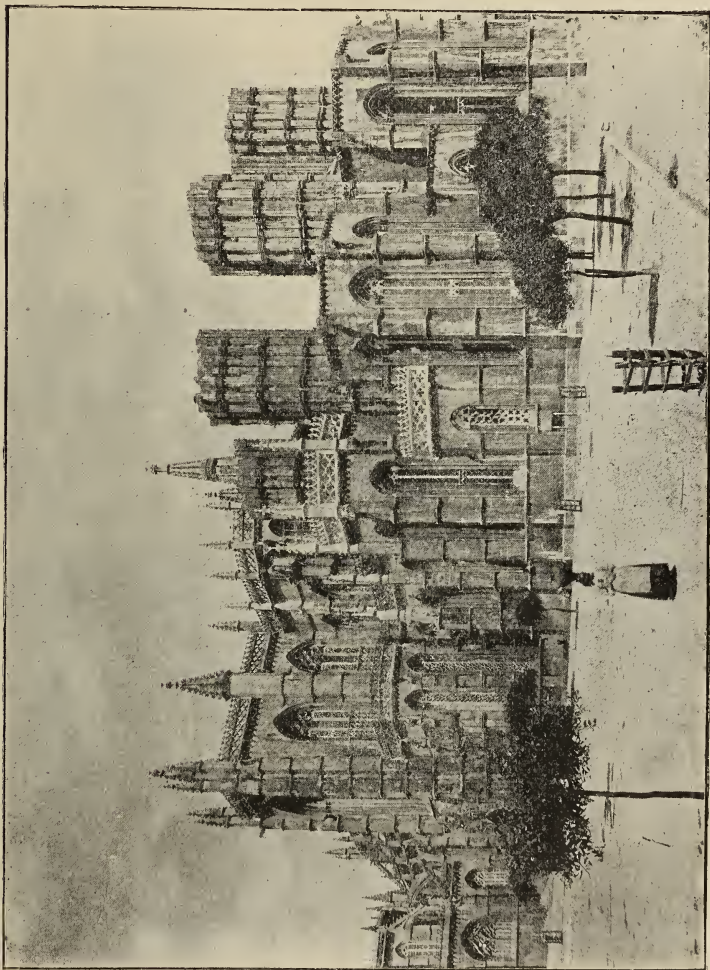
A PEASANT WOMAN.

As to the language, it is a common but most erroneous opinion that Portuguese is merely a corrupted dialect of Spanish, whereas the two are of equal antiquity, and neither derivable from the other. The two nations—rivals in this, as in everything else—naturally reproach each other with the harsh points in their respective tongues; the great similarity between Latin and Portuguese is shown by the fact that poems and letters have been written which are capable of being read in either language; at the same time the Portuguese have retained many Arabic words, as “alfandega” for “aduana” (a custom house)



and "chafariz" for "fuente" (a fountain). There is patois in Portuguese, as in nearly all languages.

I drove from Leiria to Batalha, a village in the luxuriant valley of the Lena, surrounded by hills clad with pine-trees and olives. It was here, or hereabouts, that the great battle of 14th August, 1385, was fought, when King John of Portugal defeated the army of his brother-



VIEW OF CHURCH OF MONASTERY OF BATALHA.

By permission of Mr. E. W. Mellor.

in-law, John I. of Castile, and secured the independence of Portugal. In consequence of this victory King John of Portugal established at Batalha the monastery of "Saint Maria of Victory," usually known as the Church of Batalha, one of the most exquisite and interesting ecclesiastical buildings in Europe, and the glory of ecclesiastical art in Portugal. The architecture is most varied—and in parts not in



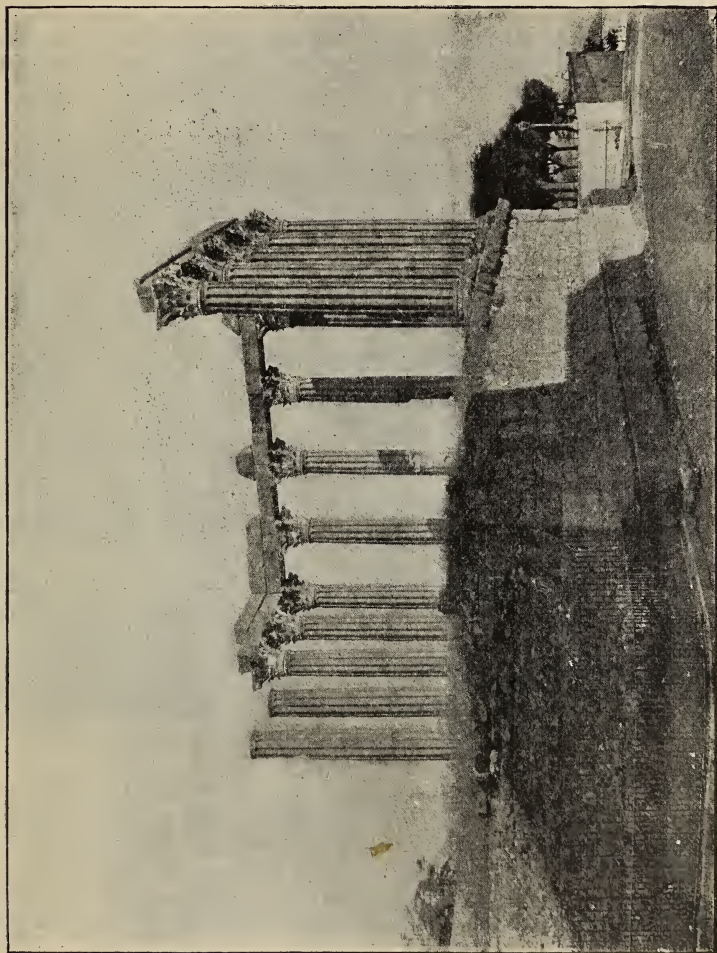
CHURCH OF BATALHA. WEST DOOR.



THE FOUNDER'S CHAPEL, BATALHA.



accord ; the greater part of the building is late Gothic, with the happy survival (here and there) of Early Pointed. I spent a long time going over the church, the founder's chapel, the refectory, chapter-house, roof and cloisters ; space will not permit me to describe these in detail ; however, any one who reads the works on the monastery by Sousa, and later by Beckford (they are in the Manchester Reference



THE TEMPLE OF DIANA AT EVORA.  
By permission of Mr. E. W. Mellor.

Library), can form a good idea of the architectural beauties and the extent of the buildings.

From Leiria I went by train to Oporto, and found the Grand Hotel there a comfortable one. The town is charmingly situated on the slopes of the hills running down to the north bank of the River Douro, on the south bank of which stream is the suburb of the "Villa Nova



de Gaia," with its villas, convents, and gardens. Oporto is about three miles from the ocean; its streets are at all times crowded with ox-wagons slowly climbing up to the higher parts of the town; the main source of the place's wealth is the exportation of port wine, to which it has given its name. The Dom Luiz Bridge crosses the Douro by a single arch of 500 feet span; there are two roadways, one 33 feet above the river and the other 200 feet; the latter affords a grand view of the city of the valley of the Douro. I visited the Augustine Convent on the south side of the stream; it is now used as an artillery barracks. It was at this point that Wellington effected his celebrated passage of the Douro in 1809, forcing the French army to retreat. There are numerous tramway routes in the town, and to the suburbs.



CROSSING THE BAY.

From Oporto I went north to the Minho River, which divides Portugal from Spain; crossing this by an imposing-looking iron bridge built in 1885 we had an excellent view of the small frontier town of Tuy, picturesquely situated on a hill rising above the river. The views from the train as we passed along Vigo Bay were excellent. At Vigo (an important Spanish commercial town and seaport, with 15,000 inhabitants, situated on the slopes of a hill crowned by a castle and surrounded by high mountains) I took passage to Liverpool in the s.s. "Orcania," one of the Pacific Steam Navigation boats. When crossing the Bay of Biscay I took this picture of two parrots on board the vessel.

## PROCEEDINGS OF THE SOCIETY.

APRIL 1ST TO JUNE 30TH, 1899.

---

The 510th Meeting of the Society was held at the Cheetham Town Hall on Tuesday, April 11th, 1899.

The Vice-Chairman (Mr. Harry Nuttall), Mr. Alderman Bowes, Mr. J. D. Wilde, Mr. T. Dentith, and other members of the Council received the members (of whom a very large number were present) at six o'clock.

Mr. J. S. REID addressed the Society on "Scottish Scenery, Song, and Story." His address was illustrated with a fine collection of lantern views and with a number of Scottish National Songs by a quartette of Mr. Reid's friends. Mrs. Reid presided at the piano.

An interval for conversation then took place, after which refreshments were served in the ante-room.

At nine o'clock Mr. HARRY SOWERBUTTS exhibited beautiful sets of "Wye" slides, provided by Mr. J. Wilde, and a set of "Klondyke" slides, the property of the Society.

Messrs. Snaddon and Harper took charge of the proceeding in the Assembly Room, and Mr. J. D. Wilde, with his friends, provided an excellent selection of music.

The meeting was exceptionally interesting, and it was after 11 o'clock before it closed.

Very hearty thanks were given to Mr. J. S. Reid, Mrs. Reid, and their friends, on the motion of Mr. Snaddon, seconded by Mr. Harper.

Mr. Reid responded.

The Rev. S. A. Steinthal was not present owing to illness, and a very cordial vote of sympathy was passed, which the Secretary was requested to forward.

Mr. Alderman Bowes moved a resolution that the best thanks of the Society be tendered to Messrs. Snaddon and Harper, to Mr. J. D. Wilde and his musical friends, to Mr. Harry Sowerbutts for their esteemed and valuable services, and to the Town Hall Committee for their kindness, which was passed and responded to by Mr. J. D. Wilde.

---

The 511th Meeting of the Society was held in the Library on Tuesday, April 18th, 1899, at 7-30 p.m. In the chair, Mr. HARRY NUTTALL, vice-chairman of the Council.

The minutes of the meetings were read and approved.

Letters were read from the following:—The Marquis of Lorne, Mr. J. W. Stosson (Chicago), Lord Charles Beresford, Sir J. Fergusson, Bart., M.P., Marquis of Lorne, Sir W. H. Houldsworth, Mr. H. T. Crook, Mr. W. R. Anthony, Dr. A. Herbertson, Messrs. Dean and Dawson, Mrs. M. S. Galloway,

Mr. D. F. Howorth, Mr. H. Nuttall, Rev. L. C. Casartelli, Mrs. Steinthal, Mr. F. Spence, Mr. C. H. Bellamy, Dr. A. J. Herbertson, Tyneside Geographical Society, Mr. J. Howard Reed, Mr. F. Womersley, Principal Hopkinson, Rev. J. Kirsop, Mr. R. J. Belisha, Mr. T. B. Latham, Miss E. Ogden, "Northern Daily Leader," Mr. H. Hilton, Mr. E. W. Mellor, Miss A. Pollitt, and Mr. E. G. W. Hewlett; and letters of condolence, which had been sent to the families of Mr. Smithson, Mr. Galloway, and Mr. John Thompson had elicited the following replies:—

"Eddisbury Hall, Macclesfield, March 28th, 1899.

"Mrs. Thompson and family desire to express their sincere thanks for your kind expressions of sympathy with them in their bereavement."

"Wood Lea, Bramhall, Cheshire, April 3rd, 1899.

"Dear Sir,—Please accept my very sincere thanks for your kind letter of the 20th ult., and the sympathy you express for me during this sad and sudden bereavement. It is comforting to feel that we have so many kind friends thinking about us and sympathising with us, though many are total strangers. Again thanking you, believe me, yours very sincerely,

"MARGARET S. GALLOWAY."

"28, Brandling Park, Newcastle-on-Tyne, April 18th, 1899.

"Dear Mr. Sowerbutts,—I beg to thank the Council, through you, on my family's behalf for the kind expression of sympathy expressed in your note of yesterday's date. It will be a lasting example to my boys in years to come to know the high respect in which their father was held by all who knew him. Again thanking you, I am, yours very sincerely,

"ISA SMITHSON."

The SECRETARY read the letter from the Tyneside Society with deep feeling, and he also read the following note on Mr. Smithson from the *Newcastle Chronicle*:—

"Geographical Institute, Newcastle-upon-Tyne, April 11th, 1899.

"Dear Sir,—It is with deepest regret that we have to advise you of the death of our esteemed secretary, Mr. G. E. T. Smithson, which took place at his residence yesterday morning, after a severe illness of nearly ten weeks. In case any of the members of your Society should wish to be represented at the funeral, Mrs. Smithson and family have desired us to inform you that the cortege will leave 28, Brandling Park, on Thursday, 13th inst., at 3-30 p.m.—Yours faithfully,

THE TYNESIDE GEOGRAPHICAL SOCIETY."

Eli Sowerbutts, Esq., F.R.G.S., St. Mary's Parsonage, Manchester."

"We announce with deep regret the death, which took place yesterday, of Mr. G. E. T. Smithson, who has for many years been actively and honourably associated with a movement which has been productive of much good in Newcastle and all the neighbourhood round about—a movement which had for its object to interest people in geography, to the end that trade and commerce might the better prosper and be extended.

"Mr. Smithson was well known as a Quayside merchant, and had been engaged in commerce during the whole of his working life; but he was better known to the public as the Secretary of the Tyneside Geographical Society, which he helped to establish, and which owed its great success more



to him than to anybody else associated with the Society. The Geographical Society and Mr. Smithson were so closely identified, and his heart was so closely bound up with its well-being, that, had it not by his efforts become so flourishing and well-established, it would have been difficult to know how it could get along without him.

“Mr. George Edward Temple Smithson was 46 years of age, and was born in South Shields. He came in his youth to Newcastle, and engaged in commercial pursuits, being connected chiefly with shipping. For thirteen years he was manager for Messrs. Scott Brothers, shipowners, Newcastle, but in the year 1891 he commenced business for himself, as a general merchant and broker, doing an extensive business, principally in the lead trade. Some weeks ago, Mr. Smithson attended a meeting of the Geographical



MR. G. E. T. SMITHSON.

By permission of the *Newcastle Leader*.

Society, and, while walking to his home in Brandling Park, he felt unwell. Becoming worse, he was found to be suffering from influenza, which led to pneumonia and other complications. He was unable to rally, and succumbed at length to the virulence of the disease.

“Mr. Smithson’s life-work lay in the Tyneside Geographical Society, and, being dead, he will be remembered less as a man of commerce than as the mainstay of the institution of which he was the secretary. The inception of the Society in 1887 was due to the Rev. F. O. Sutton, who was at that time Curate of All Saints’ Church. Mr. Sutton had been secretary of a geographical society while at Cambridge, and thought it would be a good thing to have such an institution in Newcastle; there being only one other provincial society, at Manchester. Mr. Sutton put himself in communication

with several prominent gentlemen. Sir B. C. Browne, Mayor of Newcastle, became interested in the scheme, but, in view of the Jubilee festivities, it was resolved to postpone the project until the end of the year. It happened one day that the question was being discussed among merchants on 'Change, and Mr. Smithson, who was passing, was invited to express an opinion upon the subject. Mr. Smithson had already had some experience of societies, and advocated a meeting of a few enthusiasts to set the society on its feet. So a preliminary meeting was held towards the end of 1887, in a Quayside restaurant; and, subsequently, eight gentlemen met in the Library of the Literary and Philosophical Society, and there planted the germ of the present Geographical Society. These gentlemen were Captain Watkins, Mr. Fife J. Scott, jun., Mr. Lionel Clapham, Mr. R. M. Richardson, the Rev. F. O. Sutton, Mr. F. W. Dendy, Mr. Black, and Mr. G. E. T. Smithson. The germ grew quickly, and, with Mr. Smithson as secretary, the society grew in size and in importance. The meetings were held in an upper room in Collingwood Street, where interesting lectures were given. Subsequently, as the audiences grew, the lectures were given in the Northumberland Hall, and then, nine years ago, the society purchased the Presbyterian Church in Lovaine Place, and converted it into a commodious institute, where the work of the society has become more valuable than ever. Mr. Smithson's enthusiasm on behalf of the society never flagged, and it was due to his influence that most of the great explorers came to Newcastle and lectured under the auspices of the society.

"Enthusiasm, indeed, was the mainspring in Mr. Smithson's being, and it was infectious; for everybody whom he brought to his aid was induced to throw into the work of the society all the energy of which he was capable. He had many friends, not only upon Tyneside, but in all parts of the world. Often, indeed, he received kindly tokens of regard from explorers in distant lands, who, when in Newcastle, had enjoyed his hospitality and been influenced by his kindly disposition. There will be much grieving at his death, and much sympathy, also, for those who have thus untimely been bereaved.

"Mr. Smithson leaves a widow and five children—three boys and two daughters, the eldest of whom is 17 years of age. Their residence is 28, Brandling Park. The interment took place at St. Andrew's Cemetery, on Thursday afternoon."

Mr. Smithson was an honorary member of this Society, and one of its warmest friends. A good deal of help was rendered by the officials of this Society to Mr. Smithson and the Rev. F. O. Sutton in the founding of the Tyneside Society, which was graciously acknowledged, and the two societies always worked together with great harmony. The loss of Mr. Smithson is very keenly felt by the officers of this Society.

The following presentations were announced:—

Presented by Mr. James Wilde: Forty slides of the Wye valley.

Presented by Dr. W. G. Black: "Wragge's Australasian Weather Guide and Almanac," 1898.

Presented by Manchester Ship Canal Company: "Municipalidad de Manchester. Departamento de Mercados. Descripcion del Desembarcadero para Animales en pie procedente del Estrangero, Old Trafford. Con vistas, plano, y tarifa de precios." A number of Sailing Lists, Plans and Views of the Docks.

Presented by the Comité de l'Afrique Française: "Bulletin Mensuel," 1899. No. 3. March. With Carte de l'Afrique Occidentale. Scale, 1/4,000,000.

Presented by Dr. T. N. Kelynack: "The Chinese—their Present and Future, Medical, Political, and Social." By R. Coltman, junr., M.D. Illustrated with fifteen plates. Also some further numbers of "Courier" for Ragaz, Prätigau, Davos, and the Engadine.

Presented by Mrs. Walker: "Lyonnesse." A handbook to the Isles of Scilly. By J. C. Tonkin and B. Prescott Row. Illustrated with maps and views.

Many numbers of "The African Review," with illustrations, have been presented.

Mr. M. L. SYKES, F.R.M.S., addressed the Society on "The Town and College Buildings of Cambridge." He gave the members an account of his week's visit to this great University town whilst attending the meeting of the International Zoological Congress as a delegate from Manchester. In his address Mr. Sykes referred particularly to the recent shaft-sinking now completed on Funifuti, a coral island (an atoll) in the Ellice Group.

Mr. Sykes exhibited a number of lantern views of Cambridge, and also a number of specially-prepared slides illustrating the work done at Funifuti.

A very hearty vote of thanks to Mr. Sykes for his interesting address, both on Cambridge and for his especially interesting references to the Coral Islands and the work at Funifuti, was passed.

Mr. Sykes responded.

---

The 512th Meeting of the Society was held in the Members' Room on Tuesday, April 24th, 1899, at 7-30 p.m.

The SECRETARY took charge of the meeting, and was aided by a large and important collection of new Foreign and English maps.

The proceedings, beginning at half-past seven o'clock, closed two hours later, and proved most interesting to all present. Many large Continental maps were shown, which threw a great deal of light upon the ideas of the foreigner, as compared with our own, as to the changes which have recently been made in the maps. To those unacquainted with foreign maps these varied collections came as a revelation. The changes are up to date, and in the matter of printing and paper form an object lesson to those engaged in such work in this country.

---

The 513th Meeting of the Society took place at Boggart Hole Clough on Saturday, April 29th, 1899, at 3 o'clock p.m.

A few members made another inspection of this beautiful Clough, and were very much pleased to see the wonderful results of careful planting, and the great care with which both the Clough and the playing grounds are kept.

---

The 514th Meeting of the members of this Society took place at the Ship Canal on Saturday, May 6th, 1899.

By the invitation of the Ship Canal Shareholders' Association a large party of the members were enabled to join the s.s. "Gower," and under the



direction of officials of the Ship Canal Company to make a visit to the docks, the works on the banks (particularly the grain elevator), and the Canal as far as Irlam.

Mr. REUBEN SPENCER and others gave short addresses, and very hearty thanks were given to those who had organised the excursion and who had so very ably assisted in carrying it out.

---

The 515th Meeting of the Society was held at Whitworth Park, on Saturday, May 13th, 1899, at 3 o'clock.

The members assembled at the entrance of the gallery, and very carefully inspected the splendid collection of water-colours and other works of art.

They were delighted with the additions to the gallery, and although it was a wet, dull day the various exhibits were well seen in a beautiful diffused light. The visit was very much enjoyed.

---

The Annual Meeting was held in the Society's Library, St. Mary's Parsonage, Manchester, on Wednesday, May 31st, 1899, at 12 noon. The Rev. S. A. STEINTHAL presided.

The report was read by the secretary, Mr. E. Sowerbutts. (See p. 390, Vol. XIV.).

The reports of the Victorians and of the Examiners were also read.

The CHAIRMAN moved the adoption of the reports, and said that the statements contained therein showed that the Society continued to exert the same useful influence that it had done for a good many years past.

Mr. Alderman I. BOWES seconded the motion, and remarked that members ought to exert themselves to secure an increase in the membership of the Society. He had no doubt that if this was done the Society would not, as at present, have to complain of lack of funds. He felt that the Society was doing a very useful work, and he believed there was much to be accomplished in the teaching of geography to the public. They continually found it to be the case that when events in which they were deeply interested were taking place in different parts of the world, ignorance prevailed in the minds of many people concerning the country and the people affected by those events. There were plenty of young men who seemed more disposed to play football than to study geography, but the Society must continue to persevere in its work.

The motion was then put, and carried.

The statement of accounts and the honorary auditors' report were submitted by Mr. T. W. Sowerbutts.

The HONORARY TREASURER moved the adoption of the balance sheet, referring to the heavy losses of the Society by death, and urged the members to make an effort to increase the number of members, so that they might have the necessary funds for the work of the Society, and that they might not have adverse balances in the annual balance sheet. Mr. DENTITH seconded the motion, which was carried.

Messrs. W. Aldred, F.C.A., and Mr. Theodore Gregory, F.C.A., were re-appointed auditors.

The CHAIRMAN moved the election of the Council; the motion was seconded and carried.

# THE COUNCIL.

PRESIDENT: His Royal Highness the Duke of York, K.G.

VICE-PRESIDENTS: His Eminence Cardinal Vaughan; his Grace the Duke of Devonshire, K.G.; the Right Hon. the Earl of Derby, G.C.B.; the Right Hon. the Lord Egerton of Tatton; the Right Rev. the Lord Bishop of Manchester; the Right Hon. the Lord Mayor of Manchester; his Worship the Mayor of Eccles; his Worship the Mayor of Heywood; his Worship the Mayor of Oldham; his Worship the Mayor of Salford; the Vice-Chancellor of the Victoria University; the Principal of Owens College; the Right Rev. Monsignor Gadd, V.G.; the Right Hon. Sir James Fergusson, Bart., C.I.E., M.P.; the Right Hon. A. J. Balfour, M.P.; the Right Hon. Jacob Bright, J.P.; Sir W. H. Houldsworth, Bart., M.P.; Sir Humphrey F. De Trafford, Bart.; Sir Frank Forbes Adam, C.I.E.; Alderman Sir Bosdin T. Leech, J.P.; Alderman Sir Joseph Leigh, J.P.; Mr. Benjamin Armitage, J.P. (Chomlea); Mr. Gilbert Beith; Mr. Frederic Burton; the Very Rev. L. C. Casartelli, M.A., Ph.D.; Mr. F. Cawley, M.P.; Professor W. Boyd Dawkins, M.A., F.R.S.; Professor T. H. Core, M.A.; Mr. E. F. G. Hatch, M.P.; Mr. W. H. Holland, M.P.; Mr. Henry Lee, J.P.; Mr. William Mather, J.P.; Mr. Harry Nuttall, Vice-Chairman of the Council; Mr. Samuel Ogden, J.P.; Mr. Herbert Philips, J.P.; Mr. Fritz Reiss; Mr. C. E. Schwann, M.P.; Mr. C. P. Scott, M.P.; Rev. S. A. Steinthal, F.R.G.S., F.I.Inst., Chairman of the Council; Mr. T. R. Wilkinson; and Mr. F. Zimmern.

TRUSTEES: Mr. Councillor S. H. Brooks, F.I.Inst.; Mr. Sydney L. Keymer, F.R.G.S.; and Mr. E. W. Mellor, J.P., F.R.G.S., F.I.Inst.

HON. TREASURER: Mr. S. Oppenheim, J.P., Consul for Austria-Hungary.

HON. SECRETARIES: Mr. F. Zimmern; Mr. J. D. Wilde, M.A.; and Mr. J. Howard Reed.

Mr. J. E. Balmer, F.R.G.S.; Mr. C. H. Bellamy, F.R.G.S.; Mr. J. C. Blake, F.R.G.S., F.I.Inst.; Mr. Alderman I. Bowes; Mr. G. T. Bowes; Mr. J. C. Chorlton; Mr. C. Collmann, Consul for German Empire; Mr. H. T. Crook, C.E.; Mr. Thomas Dentith; Mr. Councillor T. Hassall; Mr. N. Kolp; Mr. J. E. King, M.A., High Master, Manchester Grammar School; Lady Leech; Mr. D. A. Little; Mr. T. C. Middleton, J.P.; Mr. R. C. Phillips; Mrs. Pickering; Mr. W. J. Sinclair, M.A., M.D.; Mr. George Thomas; Mr. John Thompson; and Mr. Herman Woolley, F.R.G.S.

The hearty thanks of the Society were tendered to the Council and the Auditors and also to the Chairman.

The Chairman responded.

---

## DINNER TO COLONEL J. R. L. MACDONALD.

Lieutenant-Colonel J. R. L. Macdonald was in the evening the guest of the Society at a dinner given at the Queen's Hotel. The Rev. S. A. Steinthal presided, and there were present Sir Joseph Leigh, Mr. Alderman Bowes, Mr. J. Cottingham, Mr. T. R. Wilkinson, Mr. Reuben Spencer, Mr. Alfred Hopkinson, Q.C. (Principal of Owens College), Mr. J. H. Silberbach (Liverpool), Mr. Harry Nuttall, Dr. Sinclair, Councillor Hassall, Councillor Hailwood, Mr. Thos. Dreydel, Mr. T. C. Middleton, Mr. G. C. Haworth, Mr. N. Kolp, Mr. F. Mehl, Mr. John Benton, Dr. R. T. Williamson, Mr. T. Dentith,

Mr. J. R. Smith, Mr. Egbert Steinthal, Mr. J. D. Wilde, Mr. J. Howard Reed, Mr. John Snaddon, Mr. C. Duckworth, Mr. H. Noar, Mr. J. Baddeley, Mr. J. Lord, Mr. Norbury, Mr. Binns, Mr. Murray, Mr. Eli Sowerbutts, and others.

The toasts of "The Queen," the "Royal Family," and that of "His Royal Highness the President, the Duke of York," were proposed from the chair and duly honoured.

The CHAIRMAN then submitted "The Health of our Guest," who, he said, was one of those men who were always ready to be called upon in an emergency to perform their duty to their country and empire. Through the efforts which had led to railway extension in Arica in which Colonel J. R. Macdonald had taken a distinguished part, the younger members of the Society would, no doubt, in a few years, be able to make winter excursions to the lakes of that Continent. Since his great work on the railway survey was completed, Colonel Macdonald had undertaken another task no less important. It was not likely that any discoveries of new masses of land would now be made by geographical exploration, unless it were in the Arctic and Antarctic regions. A short time ago there were a few spaces left blank on the map, and one of these spaces, covering somewhere about 20 square degrees, had been filled in by an exploration which would ever be associated with the name of the guest of the evening. He was sure that, however enthusiastically the people across the English Channel might show their appreciation of the deeds of their travellers, the English in their quieter way honoured just as much those who had made the name of their country respected all over the world. They rejoiced that that evening they had with them one who was held in highest honour by his countrymen.

Colonel MACDONALD, who had an enthusiastic reception, said, in reply, that the expedition he had the honour to command left England in June, 1897, with a view to exploring some of the country to the north of the Uganda Protectorate. Within two-and-a-half months of reaching Mombasa the mission was abandoned, in order to assist the Protectorate out of the difficulty caused by the mutiny of its troops. By hard fighting the mutiny was checked until the arrival of reinforcements, which placed the Protectorate in a secure position. Then the expedition was able to continue its mission. For this little delay they paid a heavy price. Out of 400 of the best men, 73 were killed and wounded. There was also the loss of nine months' time, and transport and stores, which the Protectorate could only in part replace. When the expedition re-assembled at the advance depot, in July, 1898, they were deficient in escort 60 per cent, transport 43 per cent, and had trade goods which, even with economy, could not be expected to last more than four or five months. In spite of this they were able to accomplish a good deal of exploratory work. The country traversed was inhabited by a fine race of men who were, with few exceptions, extremely friendly to Europeans. The country was rich in ivory, and in more than one district a tusk of ivory could be purchased for cloth to the value of 5s., including the cost of transport. The country was also wealthy in live stock, and he believed that it would be found richer in minerals than the countries more to the south. Of course, the grain, the ordinary product of the country, was only valuable for caravans, and possibly for the Uganda Protectorate. On going back to the country after three years, he was interested to note the material improvement that had taken place. The Uganda railway had got more than half way to the Lake, and it was curious to see all along the line, at different stations, how native settlements had sprung up. He noticed particularly, that in one or two of the districts visited during his earlier expedition, beads for purposes of barter were no longer useful, and that rupees and cloth had taken their place. In Uganda itself, within his own recollection, the demand for cloth had increased at least four-fold. During the mutiny a large number of native porters had to be paid in cloth. The demand thus once started was sure to be maintained, and as the railway approached completion, and the cost of transport decreased, the markets would increase not only in Uganda but also in the countries bordering upon it. One native chief had even sent to Mombasa to buy cloth himself. The district north of Lake Rudolf required cloth. Some of the natives did not



wear clothes at all, but they would do so in time. One man who started in this condition, on leaving the expedition, after six weeks, asked for cloth in order to keep up his new-found respectability. He thought the prospects in this respect were promising, and that his expedition might be legitimately proud of having saved Uganda and its budding civilisation from destruction by mutiny. In addition, they had discovered a high and healthy country, extending to the north, inhabited by powerful tribes anxious for our friendship, and desirous of opening up their country to traders. These highlands would have a marked bearing on the future development of this part of Africa, and he was proud to think that the expedition he commanded had been the means of making it known to the Empire. In conclusion, he thanked the members of the Society for the welcome they had given him, which, he said, would always be one of the pleasant recollections in connection with his expedition in Africa.

The CHAIRMAN then proposed that Colonel Macdonald be elected an honorary member of the Society.

This was seconded by Mr. HARRY NUTTALL, vice-president of the Society, and carried heartily.

Sir JOSEPH LEIGH proposed the toast of the "Manchester Geographical Society." He was quite sure the Society was doing good work in many ways, and particularly in bringing into their midst from time to time gentlemen like Colonel Macdonald, Sir Richard Temple (who was with them about a year ago), and others, and there were many other functions which the Society was carrying out, and carrying out well.

Mr. H. NUTTALL responded. He observed that, seeing the various events since their last dinner in different parts of the world, there could be no lack of interest in the studies of the members of the Society. Their library had continued to increase, and a commercial museum was being gradually accumulated. They had the same question to face as they had to face last year—the future development and work of the Society. England and Manchester went on developing; they saw no check to it. Manchester developed in a remarkable manner, and the question for the members of the Society was what part did they intend to continue to take in that development. The present subscribers numbered about 600, and to do the work they ought to do they wanted about 2,000. He did not see why they should not obtain that, and if it could be accomplished they might have a lecture room, a room for a commercial museum, a map-room, a members' room which would serve as a kind of club, and suitable offices with a sufficient staff. Having done that, some of them had a further ideal, viz., to possess a building of their own. As had been said, nearly all the mistakes of our Government had been made through ignorance of geography. The Continent was fully alive to the importance of this question, and schools and institutions were being established in various parts, subsidised by the Government and by the Chamber of Commerce. That Society was always endeavouring to keep commercial geography to the front, because he and many of their members believed that geography was the beginning and foundation of all knowledge, of all order. Let them continue to study the science of order, which, as all knew, was heaven's first law.

Mr. J. HOWARD REED was also called upon to respond, and said the Society was one of the most cosmopolitan in the Empire, including men of every standing and degree, of every political and religious belief, and it afforded the widest possible platform for humanity at large. Therefore, Mr. Nuttall's claim that their membership should be rapidly increased was not at all a high-flown idea. He considered that the work they had been doing during the past ten or a dozen years had been merely laying the foundation stone of a great work which would in the future be done in this city.

Mr. ELI SOWERBUTTS was also called upon to respond. He said when they came to study the question the position of this country was very hazardous. In this district alone there was a tremendous population, increasing greatly every year, in the main dependent upon selling a manufactured article, the raw product of which they could not make and had to buy from abroad. He did not know in history a single instance where a vast popula-

tion had been gathered together and maintained in the way and under such conditions as the population of this district had been. They could not maintain it much longer, because they had been creating upon every side, both in foreign countries and in their own dependencies, people who were competing with them. They must, therefore, of necessity have some new trades with which to occupy their increasing population. It was because of such feelings as that that he and a few others determined they would have a geographical society, and bring to their people a knowledge of what was going on. The work of the Society had been most successful, but it was still a growing body, and he hoped Mr. Nuttall's standard would soon be realised.

Mr. REUBEN SPENCER proposed "The Future Commercial School of Manchester." There could, he said, be no misunderstanding the importance of the duty proposed and suggested in the toast. The conditions around them to-day were very different from what they were 40 to 50 years ago. To meet those altered conditions new conditions would have to be made according to requirements, by establishing a new order of trained intellects and trained men who in the future would have to promote commercial life and industries in a very different manner to what that duty had been done in the past. Their inquiry now was, not what various countries wanted from England, but how we were to meet their productions and best spite them.

Mr. ALFRED HOPKINSON replied. He was glad of the inclusion of the toast in the list because it was a recognition that the Owens College was responsible for the higher education of young Manchester, and he might perhaps say also of young Lancashire. They had had it impressed upon them very much that their main duty, so far as they could fairly accomplish it within the walls of the college, was to prepare the young men of the district for a future practical life, not by giving them a too narrow training for any particular line, but a broad training which would render them adaptable for the life they would have to take up. They were about to start a special branch of development with regard to such subjects as exchanges, and the distribution of various commodities demanded from them in different parts of the world, and he thought they might do something in preparing young men to understand what they would find when they came to actual commercial transactions. He would like to see in their college a study of geography, not merely in its narrow sense, but a study of the countries as a whole with regard to their institutions and their commercial and political condition, as well as to their languages. He regarded geography as a basis for a great deal of other knowledge, and as most important in the work of the primary teacher, who would have to deal with the education of the young.

Dr. SINCLAIR submitted the toast of the "Trade and Commerce of Manchester and Salford," and in the course of some humorous remarks gave instances in foreign politics where mistakes had been made solely through ignorance of geography.

Councillor HAILWOOD responded.

The toast of the health of the Chairman concluded the proceedings.

---

The following remarks on the Society by the *Courier* are important:—Special interest and importance were given to the annual dinner of the Manchester Geographical Society last evening by the presence and speech of Colonel J. E. L. Macdonald. To this gallant officer belong the twin distinctions of having commanded the military expedition which saved Uganda from the Soudanese mutineers, and of having conducted that exploration to the north of Lake Rudolf which has had the effect of adding an extensive tract of healthy hill country, inhabited by friendly and intelligent tribes, to the African portion of the British Empire. Colonel Macdonald's speech gave an eminently practical turn to the anniversary proceedings of the Society. Several of the members had insisted upon the value of the services which a society promoting the study of geography, and the diffusion of geographical knowledge, is calculated to render to a great commercial

city like Manchester, whose merchandise penetrates to the uttermost ends of the earth. The importance of the work done by the Society is so obvious that such insistence would appear superfluous but for the too abundant evidence that knowledge of distant places in the world is not as yet a strong feature of the average Englishman's intellectual equipment. The greatly-increased attention which is given to this study in Continental courses of commercial education constitutes a warning which this country cannot afford to ignore. Our local Geographical Society has lately established a geographical and commercial museum which will doubtless prove of great practical value to the mercantile community, but their efforts have not as yet received that amount of general support which it is most desirable should be extended to them. It ought to be remembered that the work thus undertaken by the Society is in Continental cities initiated by the authorities, and maintained at the public expense. Its close connection with trade and manufactures was clearly shown in Colonel Macdonald's address. "Little Englanders" may sneer at the idea of new markets for our commerce being opened up in the heart of the Dark Continent, but men who have actually travelled there, and made the acquaintance of the natives, take a hopeful view of the future. It is gratifying to learn that native settlements are already springing up along the course of the Mombasa-Uganda Railway, although little more than one-half of the line has as yet been constructed. Pieces of cotton cloth are beginning to take the place of beads in the native currency, and in Uganda the demand for the products of Lancastrian looms has increased four-fold within a few years. It cannot fail to receive a great additional stimulus from the completion of the railway. Uganda, however, is not the only country which will be affected by that event. The influence of the new artery of communication is bound to make itself felt throughout a region nearly as large as Europe, and it would be rash to set bounds to the expansion of commerce which the next ten years are likely to witness in that quarter of the world.

---

#### CONFERENCE OF GEOGRAPHICAL SOCIETIES ON GEOGRAPHICAL AND COMMERCIAL MUSEUMS.

The Manchester Geographical Society, having already established on their premises an excellent geographical and commercial museum, had invited representatives of kindred societies in various towns to meet with a view to discussing the advisability of forming similar collections in other centres. The conference took place on Wednesday, May 31st, at 3 o'clock p.m., in the Society's Rooms in Manchester. The Rev. S. A. Steinthal was elected as chairman of the conference. Delegates were present from the Royal Geographical Society, and the Liverpool, Eccles, Leigh, and other Societies. The Manchester Society was represented by Mr. J. D. Wilde, Mr. T. Dentith, and Mr. E. Sowerbutts (secretary). Letters were received from two or three societies endorsing the idea of establishing museums, and agreeing to co-operate in any movement that might be set on foot in this direction.

After considerable discussion, the basis of which was the address to the Society on the subject published in the *Journal* (pp. , Vol. ), and after a close examination of the Society's collection and of loans from Mr. Arnold, Messrs. G. Philip, Son, and Nephew, Mr. Silberbach, and others, it was resolved "That the delegates present recommend the formation of a committee, consisting of one or more representatives from each of the British Societies, for the purpose of considering the best means of founding Geographical and Commercial Museums in connection with each Society, and of arranging for interchange of exhibits and otherwise to be mutually beneficial."

Mr. Sowerbutts was requested to act as secretary and convener *pro. tem.*

It was decided to have the next meeting as early as convenient.

The question of Blue Books was referred to the consideration of the Committee.

Thanks to the Chairman and Secretary brought a most interesting meeting to a close.



The 516th Meeting of the Society was held at the Swan Hotel, Meltham, on Saturday, June 3rd, 1899, at 5 p.m. In the chair, Mr. W. H. WILLIAMSON.

A large party of members went to Greenfield by train, and were there met by carriages, which drove across the Moors to the Moorcock Inn, the Isle of Skye Inn, the Wood Inn, through Holmfirth to Meltham. The members were received at Meltham by Mr. G. F. Armitage, and they inspected his quaint house and garden, the Town Hall, and the Carlile Institute. They were very much delighted with this beautiful building and lingered as long as possible. Mr. Armitage took photographs of the party at the Town Hall.

A move was made to the Hotel, where an excellent tea was served.

Very hearty thanks were tendered to Col. Carlile, to Mr. Armitage (who had very kindly made the very satisfactory arrangements), to the hostess, and to our guide, Mr. Dentith, for their kindness and valuable help to the party.

A short stroll after tea in this quiet village was followed by another drive to Marsden, where the train was caught, and by which a fairly early return to the City was made.

The day was a perfect summer's day, and the drives across the Moors were most delightful. The party felt that this the fourth visit to Saddleworth had completed a round of this mountainous district in so pleasant a way that it could not be easily forgotten.

The 517th Meeting of the Society took place at the Tregarthen Hotel, Hugh Town, St. Mary's, on Friday, June 16th, 1899, at 7-30 p.m. In the chair, Mr. JOEL WAINWRIGHT, J.P.

This party of members charmed to Scilly by the descriptions and pictures of Mr. S. H. Brooks, left Manchester on the 9th, at 7-30 p.m., travelling all night to Penzance, where arrival was made at 8 a.m.

The omnibus from the Great Western Hotel was waiting, and the party repaired thither for food and refreshments.

At half-past 10 the s.s. "Lyonnesse" was boarded, and at 2 o'clock, after a delightful sail over a quiet sea, the members were enjoying lunch at the Tregarthen Hotel.

A week of great enjoyment was spent in the islands, which the photographer described in the *Cornishman* of June 24th as follows:—

#### THE ISLES OF THE WEST.

A large party, consisting of members of the Manchester Geographical Society and their friends, have just concluded a week's visit to these charming Isles. Scilly wore its most inviting robes, and, favoured with the best of weather, the party in two large boats sailed lazily day after day over summer seas, through wide sounds and narrow channels, at one time touching rugged rocks and again gliding smoothly past sandy bars, gratifying in turn each individual taste.

"Different minds  
Incline to different objects,  
One pursues the vast alone, the wonderful, the wild;  
Another sighs for harmony and grace and gentlest beauty."

Landing frequently to explore, and inspect more closely the objects of interest which these isles possess in such abundance, here the geologist became the centre of a listening circle; there the antiquarian explained some

of the mysteries of the rude remains of the forefathers' handiwork. Again from the hill-tops the innumerable outlying islets were pointed out, and named, by a Scillonian, and the stories of shipwrecks thereon recounted; while the artists of the party found themselves everywhere embarrassed with riches. Long will the recollection last of the visits to the home of the wild sea-birds; St. Agnes lighthouse; graves of the Kings of Lyonesse; Tresco Abbey Gardens with their wealth of tropical scenery; most romantic of all—landing at Round Island and climb of nearly 400 steps up the side of the island to the lighthouse, a miniature St. Helena.

The picnics on the different islands were in true Scillonian *al fresco* style, cut off from the busy bustling world, in a calm so complete that it seemed as if all nature slumbered.

While under rich sunset skies each evening, on the return to St. Mary's, the musical element contributed its share to the general enjoyment, and songs, pathetic and gay, floated over the still waters to the time of the helping oars, filling the heart with memories the echoes of which will long live to recall these happy days pronounced by one and all to have been beyond the most sanguine expectations.

Messrs. Gibson and Sons, of Scilly and Penzance, accompanied the party throughout the tour, and secured a large and highly successful series of photographs of the party *en voyage* and at all the places visited, forming a pictorial record of the trip.

The strangers, on leaving Scilly, gave three cheers for the Scillonians, and expressed regret at having so soon to leave their beautiful home. "So say all we; so say we all; hip, hip, hurrah!"

These pleasing experiences will no doubt induce many friends to visit, and help considerably to make more widely known the peculiarly charming features of this little archipelago.

The party had so much pleasure from the visit that the Chairman was requested to make that known, which he did in the words of the following letter to the *Cornishman*:—

# VISIT OF THE MANCHESTER GEOGRAPHICAL SOCIETY TO THE ISLES OF SCILLY.

Editor, *Cornishman*.

Dear Sir,—

If nature's loveliness can touch the soul,  
Or sweet repose can help to make thee whole,  
If peace and comfort and congenial cheer  
Can please thee, wanderer, why not linger here?

WAUGH.

Thus wrote a favourite Lancashire poet, but we believe he never visited the Isles of Scilly, or some equally pleasant memory would have been recorded of it by him.

As the Secretary of the Society and as Chairman of the party we cannot leave the Isles without expressing our surprise that more people from the manufacturing towns and cities of the north do not visit these interesting places.

After a week's thorough enjoyment of the wonderful scenes which they afford, our pleasure is increased by your permission to leave this thankful record behind us.

Our visit was not conceived exactly in the pursuit of geographical knowledge only, though there is plenty of that under our eyes; but it was taken rather in a holiday sense for change of air and scene, for health and pleasure; and we found them all in an abundant degree. Every sail we have taken, every walk and drive—morning, noon, and evening—have seemed to open up new and wonderful delights to our astonished eyes.

Nothing could exceed the courtesy and kindly attention with which we have been everywhere, and by everybody, received. The Scillonians, in our experience, have a courteous character and bearing towards each other, and, what for the moment is much to the point, they are most kind and attentive to visitors.

Their lives seem happy and contented, and though industrious and thrifty, there is an absence of that nervous hurry-scurry of city life. Primitive in habit and aspiration, maybe; but there seems no want, no dirt, no drunkenness, and, judging from all we heard, or rather what we did not hear, there is no bad language. The phenomenally clean and happy-looking children in the streets, roads, and lanes is of itself a testimony to domestic comfort in a high and genuine sense.

Our headquarters were at Tregarthen's Hotel. There are other hotels, and no doubt good, but our experience can only apply to Tregarthen's, where we found every comfort. We think Shenstone must have had this hostelry in his mind when he wrote—

“Where e'er I travel life's dull round,  
What e'er my stages may have been,  
I sigh to think I still have found  
The warmest welcome at an inn.”

The food, accommodation, attention, and terms were in every respect all that could be wished, the servants vying with each other to make us comfortable, and the indefatigable and sweet efforts by Mrs. Bellis, the manageress, made us quite happy and content. Our regret only came on when we had to leave.

We cannot imagine a more lovely place for a holiday for ladies and gentlemen. Especially will the intelligent student find recreative delight, whether in our special subject of geography or in entomology, ornithology, archæology, and especially in geology and botany.

A word of praise is due to Mr. Frank Tonkin—a veritable factotum of a Scillonian, and who has been in truth our “Guide, philosopher, and friend.”

“May the Isles of Scilly prosper,” is our wish.

ELI SOWERBUTTS, F.R.G.S.,

Secretary of the Manchester Geographical Society.

JOEL WAINWRIGHT, J.P., F.C.A.,

Chairman of the party.

June 17th, 1899.

A voyage in the ss. “Lady of the Isles” over a quiet sea brought the party back to Penzance, where visits were made to St. Michael's Mount (by permission of Lord St. Levan), and to Land's End. The party here broke up, some of them returning home after 10 days. St. Ives, Plymouth, Torquay, Dartmouth, Truro, Exeter, Bristol, Hereford, and Shrewsbury were visited on the return by members of the party.

At this meeting the thanks of the members were given to Mr. Dorrien Smith and Lord St. Levan for their kind letters, to our guides and friends, Mr. F. Tonkin, Mr. J. Lethbridge, and Mr. Gibson, and to the hostess of the hotel, Mrs. Bellis.

It was also resolved that a parcel of books and papers should be forwarded to the keepers of the lighthouses at Round Island and St. Agnes.

The Chairman and leader was also most heartily and cordially thanked for his services. Mr. Wainwright responded.



# THE JOURNAL

OF THE

## MANCHESTER GEOGRAPHICAL SOCIETY.

---

### CUBA: "QUEEN OF THE ANTILLES."

By J. HOWARD REED, Hon. Secretary.

[Addressed to the Members in the Library, on Wednesday, December 14th, 1898.]

THE stirring events which have taken place in Cuba during the past few months, as a result of the outbreak of war between Spain and the United States, have been the means of bringing that fertile island more before the notice of the general public in this country than has ever before been the case. At such a time, and when the late Spanish possession is about to commence a new career under distinctly different governmental conditions, it is fitting that the Manchester Geographical Society should devote some little attention to the island. It is not, of course, the province of this society to enter into a consideration of the war which has recently been raging, or to deal with the various political and economical conditions and questions which have been raised. The following notes will, therefore, deal solely with geographical and kindred matters connected with the island.

Cuba is at once the largest and the most important island of the West Indian group. It is situated almost wholly between the twentieth and twenty-third parallels of north latitude, its longitude being from seventy-four degrees in the extreme east to eighty-five degrees at its most westerly point. From the latitudes quoted it will be observed that the island falls just to the south of the Tropic of Cancer, and is therefore wholly within the torrid zone.

The island has a total length, from east to west, of some 750 miles. Its width varies from twenty-eight to one hundred miles, and averages from sixty to seventy miles. The total superficial area falls somewhere between forty-two and forty-three thousand square miles.

The coast-line of Cuba is, roughly, two thousand miles in length, but less than one third of this is available for shipping,

VOL. XV.—Nos. 7-9—JULY TO SEPT., 1899.

owing to the large number of banks, reefs, and rocks that exist.

The mountains are almost entirely confined to the south-eastern portion of the island. In this neighbourhood groups of mountains are the rule, and the highest peaks of these reach from seven to eight thousand feet above the level of the sea. In the other portions of the island only isolated eminences are to be found, and none of these are important from the point of view of altitude. The mountains are covered to their summits with trees, and are clothed with verdure throughout the whole year. The enchanting woodland appearance of the island is testified by numerous travellers, and it was doubtless the impression thus produced on his imaginative faculties that led Columbus to pronounce the island that he had discovered, "the most beautiful land that eyes have ever beheld."

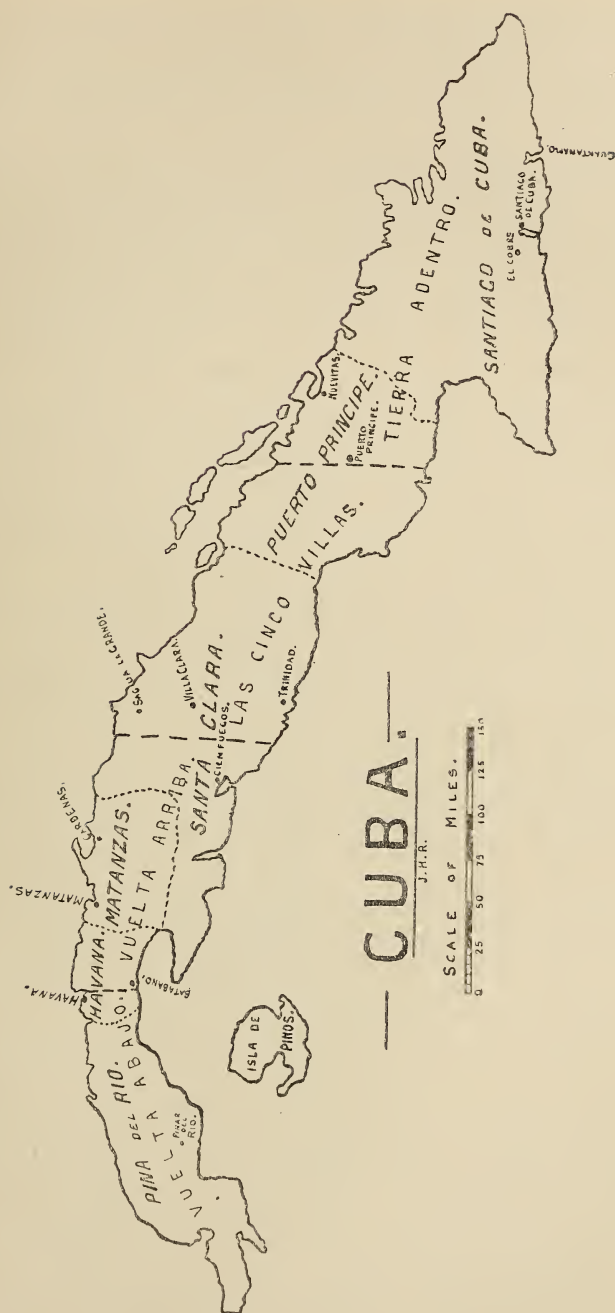
The rivers are unimportant, and are of no great length, flowing as they do north and south in a transverse direction. Some few of them, however, are navigable for a short distance inland; but the great majority of the streams are used for irrigation purposes only. The water in the rivers is, generally speaking, very pure, clear, and cool, and is delicious for drinking.

The island of Cuba is divided, in the popular sense, into four portions, known respectively as *Vuelta Abajo* (the lower turn), *Vuelta Arriba* (the upper turn), *Las Cinco Villas* (the five towns), and *Tierra Adentro* (the interior country). The first named division extends from the extreme west of the island to the meridian of Havana. The second from Havana to the meridian of Santa Clara. From here to the meridian of Puerto Principe extends the third division referred to, while the *Tierra Adentro* occupies the remaining portion of the island to the east.

Ecclesiastically, Cuba is divided into two dioceses. The archbishopric of Santiago comprises the eastern half of the island, while the western half is included within the bishopric of Havana.

For governmental purposes the island is mapped out into six provinces, known by the following distinctive names: Pinar del Rio, Havana, Matanzas, Santa Clara, Puerto Principe, and Santiago de Cuba. The provincial divisions have been named in the order of their geographical sequence, counting from the western end of the island. The chief city of each province bears the same name as that by which the provincial division in which it is situated is known.

As will have been gathered, from what has already been said, the climate of Cuba is of tropical character. During the summer months the temperature is very high and the weather sultry, fever being prevalent in some places. In the winter, however, the climate is delightful. The nights are then cool, rendering sleep agreeable and refreshing; the days, too, although





still hot, are not unbearable. Numbers of Americans have been in the habit of visiting Cuba each season, to escape the vicissitudes of a northern winter, and business men from New York have gone there to recuperate after being broken down in health.

Rain falls in every month of the year, the latter part of May and June and July supplying the largest quantity. Hailstorms rarely occur, and snow is quite unknown, even among the mountains. Occasional hurricanes occur, but these are of less violence than in the island of Jamaica. Cuba has practically three seasons. The dry season prevails during March, April, and part of May, and from that time to October is the rainy season. The third season, known as the "northers" ("les nortes"), extends from November to February. During this period occasional cold winds blow from the north. They rarely continue for more than a couple of days at a time, and Americans consider them as less troublesome than their own March winds. During the early spring rains the temperature is uncomfortably high, both night and day. The heat in the interior of the island is never so intense as on the coast, owing, doubtless, to the greater elevation.

The national seal of the Spaniard is indelibly stamped upon the population of the island. Unlike the British Colonies in the West Indies, Cuba bears the distinct impress of the parent country. While in our colonies the white inhabitants are enormously outnumbered by the black population, the reverse is the case in Cuba. Spain has poured her own people into the island, so that those of Spanish blood are the vast majority, and are said to outnumber, in the proportion of at least ten to one, the whole of the English and Scotch population existing in all the British West Indies. According to the latest reliable figures, the population of Cuba is about 1,600,000, and is composed of Spaniards, Creoles, Mulattoes, and Negroes. More than half the total population are whites, of Spanish blood. Of recent years considerable numbers of Chinese coolies have been introduced into the island, and are employed as labourers in the various industries carried on.

As a class, the native born Cubans are described as a simple-hearted, hospitable race of people, with a desire to show kindness to strangers. The men of the superior classes are generally well-informed and well-bred, many of them having been educated either in Europe or the United States. The peasantry, even, possess a politeness of manner far exceeding that which is frequently found in more favoured lands. Although often well-educated, and in many cases highly accomplished in science, art, or literature, the Cuban is described as of listless temperament and lacking in ambition and energy. This may be due to the influence of the climate on the native constitution, acting

through successive generations, or it may be engendered by the lack of opportunity, brought about by the peculiar conditions of government which have for so long prevailed, and which, from their very nature, have afforded little or no opening for ambitious youths. Probably it is due to a combination of these two conditions. The men of the cities are somewhat small or undergrown, and are not of robust physique. The countrymen, however, are often strong, big, and well proportioned. A considerable number of the inhabitants have come from the Canary Islands, or are the descendants of immigrants from the Canaries. These people come of good stock, and are noted for their superior stature. The slave trade in Cuba has been abolished for a considerable time.

Women in Cuba are absolutely the slaves of custom. The freedom enjoyed by most European, and all American ladies, is quite unknown to them. They never walk or drive alone, and cannot even attend church without an attendant of some kind. The reception of male visitors alone by the Cuban lady is an unheard of impropriety. The Cuban lover can on no account be allowed to exchange confidences with the object of his affections, and a betrothed couple must accomplish all their love-making in the presence of some suitable chaperon. The ladies of Cuba are practically uneducated, as education is understood in this country, and few of them can do more than simply read and write, and many not even that. It is rarely that a Cuban lady reads a book as a matter either of recreation or self-improvement, most of their time being spent in a more or less listless manner, with apparently little or no object. Occasional balls and visits to the theatre help to dispel the monotony, while more or less regular daily drives in a volante (Cuban carriage), with other various simple amusements, go to make up the routine of life of a Cuban lady.

At the time of the disturbances of 1869-76 no less than 145,000 troops were quartered in the island, while during the recent rebellion Spain employed some 200,000 soldiers in her attempts to dragoon the Cubans into obedience. It will be seen from the above that in ordinary times the cities of Cuba must have had quite a military aspect, and that soldiers formed a considerable section of the inhabitants.

All the amusements and recreations known to the people of Castile, or, indeed, to the whole Spanish speaking race, are to be found in Cuba. Sunday is the great day for cock fights, bull fights, and masquerade balls. Bull fights are attended by all classes of society, gentle ladies, and young children even, appearing in the audiences. Cock fighting is one of the favourite sports of the Cuban men, who will watch battle after battle the whole day through, betting hard, and for high stakes, upon their favourites. Masked balls, especially during the carnival time,

are a favourite form of amusement, and various classes of society, even the negroes, organise these entertainments. The Cubans are very fond of music, and one of the favourite and more innocent amusements of the people is to promenade and listen to the military bands. Good theatres and opera houses are found in the principal cities, and in Havana is a large and well-built theatre, known as the Tacon, which will accommodate some three thousand persons.

The natural products of Cuba, both vegetable and mineral, are very varied; and under more peaceful conditions than have recently prevailed, and with a more liberal form of government than has hitherto existed, the commercial possibilities of the island would be simply enormous. The resources of the island have never been developed as they might have been. The commercial developments, however, have been very considerable. According to reliable statistics, the exports for 1892 were valued at no less than £18,000,000, while the imports for the same year amounted to £11,400,000. This, it will be noted, was some time before the recent outbreak had occurred to disturb the industrial and commercial life of the island, and ruin, as it has, the prosperity of the inhabitants for, probably, many years to come.

It is questionable if the mineral wealth of Cuba is, even now, really known and understood. The future may perhaps do much for Cuba in the direction of an increased exploitation of the minerals which are at present known, or in the discovery of others not, up to now, suspected to exist. At the present time several metals are found in the mountains of the island, copper so far proving to be the most abundant. Silver is found in small quantities; iron also exists, but only apparently in limited quantities. A hard coal, of stony and poor quality, is also procurable, as well as a kind of bitumen, known locally as "chapa-pote." Various kinds of mineral waters flow from natural springs in the mountainous districts, most of which possess valuable medicinal qualities. In the neighbourhood of some of these springs public baths have been established, and large numbers of invalids use them for the curative properties of which they are possessed. The baths of San Diego, situated some ninety miles from Havana, are especially famous among Cubans.

Some twelve miles from the city of Santiago de Cuba very extensive copper mines exist. They are known as the Cobre Copper Mines, being situated in the immediate vicinity of a village bearing that name. Copper is reported to have been worked in this district ever since the first half of the sixteenth century, indeed, it has been stated that the Cobre mines were the first that were ever worked, by Europeans, in the New World. It is even said that Hernando Cortez (famed for his conquest of Mexico) compelled the natives of the island to work



in these mines, thus obtaining great wealth for himself, although succeeding at the same time in killing large numbers of the Indians by the heavy and arduous work to which they were previously quite unaccustomed. However this may be, there is little doubt that the Cobre mines have been worked for a very long time in a more or less irregular or spasmodic manner. Some years ago nearly all the various companies who owned the mines were bought up by an English syndicate, and mining was commenced on a larger and more systematic scale. Five-and-twenty years ago some two hundred and fifty men were employed in the mine, the captains and leading workmen being mostly practical miners from Wales or Cornwall, while the labourers were Chinese and negroes. Fifty tons of ore per day was at that time being procured, most of which was shipped to European ports.

The great natural wealth of Cuba really consists in the richness and marvellous variety of its vegetable produce. Every kind of fruit common to tropical countries is to be found in the island in the greatest profusion. Oranges, pine-apples, mangoes, and many other luscious fruits are cultivated with ease and in great abundance. Plantains, or bananas, which form the most important article of food for the lower classes of the inhabitants, are grown in enormous quantities, while cocoa-nuts are also very common. All kinds of vegetables, such as onions, cabbages, and sweet potatoes are largely grown, and are always in evidence in the market places of the cities. The most extensive cultivations that are carried on, however, are the growing of sugar, tobacco, and coffee.

The cultivation of the sugar cane, and the manufacture of sugar for the markets of the world, have been among the most important of the industries carried on in the island of Cuba. In 1894 the output of Cuban sugar reached the astounding figure of 1,100,000 tons. Owing, however, to the recent trouble, and its paralysing effect upon industry and commerce, it has been estimated that the quantity produced during 1897 would only equal about 150,000 tons.

The estates for growing sugar cane vary in size from, perhaps, five hundred to ten thousand acres, large capital being required for profitable cultivation. Several kinds of cane are grown, a variety introduced into Cuba about a hundred years ago, from Otaite, being much preferred by most growers. They are propagated by slips or cuttings, the tops of the canes, with two or three of the upper joints, being used for the purpose. They are planted in holes dug by hand, or in trenches about a foot deep formed by the plough. The planting takes place from June to October, during the rainy season, advantage being taken of any dry intervals that may occur. The canes grow to an average height of from six to eight feet, but fre-

quently reach as much as 20 feet. The colour, quality, and various other characteristics, vary considerably with the quality of the soil and mode of culture. The cutting of the canes commences soon after Christmas, and continues until May. Crops are raised for several successive seasons from the same roots, the rule being to replant about one-third of an estate each season. The labourers upon the estates are principally negroes, but Chinese coolies are also largely employed.

When the season arrives for the cutting of the canes large gangs of workpeople, men, women, and children, are turned out into the fields, armed with a specially-formed knife, with which the canes are rapidly cut down. Carts follow the cutters, into which the canes are gathered for conveyance to the crushing mill. These specially-constructed mills generally consist of three large revolving iron rollers, between which the canes are passed and crushed, the juice being caught in a trough beneath. This is then passed through various processes of filtering, clarifying, and evaporation, the molasses being separated from the syrup, the latter at last passing into moulds, where it is allowed to crystallise into sugar. Other operations of drying, sorting, and crushing are necessary before the finished article is ready for packing into cases ready for shipment. The molasses also receives special treatment before it is ready for the market. The crushed canes from the mill are used as fuel for the boilers in the factory, while the green tops provide fodder for the cattle. Considerable quantities of rum are also made from the sugar grown in Cuba.

During its undisturbed days the most valuable and important industries of Cuba were undoubtedly those connected with the growth of the tobacco plant, and its manufacture for the markets of the world. Some four years ago the output of tobacco in the island reached no less a quantity than 500,000 tons. This fell in 1897 to 75,000 tons, so that, in consequence of the rebellion, and the drastic measures adopted for its suppression, disaster has fallen very heavily upon those engaged in the industry. With the restoration of peace and security there is little doubt that the output of tobacco will increase, and the "weed" will again assert itself as commercial king.

The tobacco plantations or farms of Cuba, are mostly located in the lower lying portion of the island, situated in the west, where extremely fertile, well sheltered, and well watered valleys exist. The most suitable lands for the purpose are found on the southern side of the hills forming the water parting of the narrow portion of the island to the west of Havana. The best tobacco-growing lands are of limited extent, being principally contained within the area of a district, some 80 miles long by 20 miles wide, in the midst of which Pinar del Rio will be found on reference to the map. This specially

favoured area is sheltered on the north by the hills previously referred to, while to the south it extends practically to the ocean. The farms are usually situated along the banks of rivers, or other suitable moist or low-lying localities.

The tobacco plant is raised from seed, the young seedlings being duly transplanted into properly prepared and well-manured beds. As the plants grow they require and receive close attention, the earth between them being occasionally stirred or loosened to accelerate their growth, while all weeds are carefully removed and kept under. The plants grow to a height of about six feet, or even considerably higher if allowed.

The tobacco farmer pinches off, from time to time, any buds or shoots which he considers need removal for the purpose of limiting the height of the plant, or improving the quality of the leaves. The tobacco plant is subject to the destructive attack of various insects, and great vigilance is required on the part of the planter to prevent serious damage being done to his crop by these pests. A large ant, peculiar to Cuba, is a serious enemy to the plant, and greatly taxes the energy of the farmer. So numerous are these insects at times that they become a serious plague, threatening the entire destruction of a crop. When ripe, the leaves are gathered, dried in the sun, sorted, and tied into bundles. The leaves from the upper portions of the plants are considered to be of better and more delicate quality. The expense of growing the finer qualities of tobacco is very great, while the consumption of cigars of recent years has increased enormously. This has led to the plants being more heavily manured, with the result that the flavour of the tobacco has suffered. The finest quality of cigars are, therefore, only now made for the market in comparatively small quantities.

From the farms the tobacco leaves are conveyed in bales, on the backs of mules, to the nearest railway, and in due course reach the factories. Here, after passing through various processes of sorting, moistening, cutting, and selecting, the leaves are rolled into cigars of various kinds and flavours, according to the quality of the plant, the position of the leaf on the plant from which it was plucked, or the portion of the leaf used. In Cuba the persons engaged in rolling cigars are mostly whites, either Cubans or Spaniards. Large quantities of cigarettes, as is well known, are also made in the island, and in this manufacture great numbers of Chinese workmen are employed. Many very large factories, where these industries are carried on, exist, some of which employ as many as from 1,000 to 1,500 hands. These include, in addition to the actual cigar and cigarette rollers, box-makers, printers, packers, and others. Large numbers of cigarettes are made for the trade, outside the factories, by soldiers, hall-porters, and other people with time on their hands, who by this means add to their scanty incomes.



Among the various cultivations carried on in the island of Cuba, that of coffee takes a high and important place. The growing of this valuable and almost indispensable berry is carried on more or less all over the island, and was at one time even more extensive than it has now been for some time past. Many of the valleys where coffee was at one time grown are now more largely used for sugar. The coffee estates have extended into the mountainous districts where land is cheap, the climate healthy, and where berries of better quality can be grown. The coffee estates vary in size from one hundred to one thousand acres, and are, in some cases in the mountains, even of greater extent.

The very familiar coffee berry grows on an evergreen shrub, which is raised from seed. The berries, after being dried, are planted in holes made in rows in the ground, much in the same way as is the case with beans in this country. After a few weeks the young plants appear, and these are carefully tended and weeded for the space of two years, by which time the shrubs will have reached a height of between two and three feet. They are then cropped, and the following season bear fruit in small quantities. When four years old they are in full bearing, and give regular crops for a period of from twenty-five to thirty years. The bloom is a small white wax-like flower, shaped like a Maltese cross. The berries, when ripe, somewhat resemble small cherries, and each one contains within the rind two small beans, or seeds, which form the coffee of commerce. The berries pass through various processes for the removal of the rind, afterwards being washed in water, and then dried in the sun for days at a time. Other operations, skinning, sorting, sifting, and packing, are necessary before the coffee is ready for the market; the last processes, roasting and grinding, being generally, as is well known, carried out after the berries reach the hands of the merchants or retail dealers.

On the coffee estates a large number of other fruits and vegetables are grown. In order to provide the necessary shade for the tender coffee plants, palms, plantains, pomegranates, cacao or chocolate trees, and other fruits are planted among them. The paths or roads through the estates are lined with palms, which form beautiful avenues. In addition to these, rice, potatoes, and other vegetables are grown to provide for the needs of the labourers. Probably the most profitable of these additional productions cultivated by the coffee growers is the fruit of the cacao. The fruit grows upon trees very much like small pear trees, they bear fruit at about six years old, and produce it all the year round. The seeds grow in pods or capsules, twenty-five to thirty or more being contained in each. These, after the necessary preparation, form the chocolate or cocoa of commerce.

In addition to the various vegetable productions of Cuba, already referred to, large quantities of valuable timber and rich woods are found in the island. Some of the less accessible districts in the interior are covered with millions of acres of dense forests, which are as yet practically untouched. In these are to be found many kinds of woods of great value for manufacturing purposes. Ebony, cedar, various kinds of canes, and mahogany exist in vast quantities. Enormous logs of the last named are exported all over the world, and the fame of Cuba mahogany is well known to shipbuilders, furniture manufacturers, and others in this country.

The city of Havana dates its foundation back to the year 1574. Tradition has it, however, that "San Christobal de la Habana," which is the full Spanish name of the capital, did not actually exist on its present site at that time, but was then situated on the opposite side of the island (exactly due south from where it now is), at a place at present known as Batabano. It is further stated that so early as 1515 about fifty persons founded a settlement, at the place referred to, which they named "San Christobal," in honour of the discoverer of the island. Hernando Cortez is said to have sailed on his world-famed expedition to Mexico from this place in the year 1519. The capital is reported to have been moved to its present situation owing to the unhealthiness of its former site, and to the tormenting prevalence of mosquitoes. The shore of the bay forming the present site of the city of Havana was originally known to the Spaniards as "Carenas," meaning "place of repair," and was used as early as 1508 for the careening and repairing of Spanish vessels. The founder of the new city gave it the name of "Llave del Nuevo Mundo" ("Key of the New World"), which title it retains upon its escutcheon to the present day.

The city was frequently attacked, and occasionally sacked and robbed by pirates and buccaneers—English, French, and Dutch—during the sixteenth century, and repeated troubles of this kind first led to the building of forts for defensive purposes.

Havana is situated on the northern coast of the island, almost immediately opposite to the southern extremity of Florida. The city is built on the shores of an extensive inlet, or arm of the sea, its various buildings clustering themselves more particularly on the western shores of the almost land-locked bay. The harbour and city are nearly surrounded by rocky eminences, reaching 150 feet in height, several of which are crowned by frowning fortresses. The old town was formerly surrounded by walls, except at the quays, and at the water side. The growth of the city, however, has been so great that the defensive walls have been gradually absorbed within the town, and the bastions and massive masonry have now almost entirely

disappeared. Havana, as it is viewed from the sea, is said to present a singularly beautiful sight. Palatial buildings of all kinds, domes and towers of numerous churches, formidable forts and other architectural structures form imposing features in the picture. Glimpses of open squares, long avenues of trees, and wide suburban boulevards add picturesque details to the scene; while the lights and shades, the deep colours and glowing tints, caused by the brilliance of the tropical sun, give glory and vigorous beauty to the whole.

The harbour of Havana is said to be one of the finest in the world. It is reached by means of a narrow entrance, only a few hundred yards wide, which is, however, easy of access. Though so narrow, it is wide enough to admit of the passage of large vessels, and is, moreover, free from either bar or rock to impede navigation. The inner harbour is very capacious, and is capable of providing accommodation for many hundreds of large ships. The water is deep, and vessels of heavy draught can get quite close to the wharves to load or discharge cargo. Although the water outside the harbour is beautifully clear and clean, that within the basin is quite the reverse. This is due to the fact that the whole of the sewage of the capital is drained into the bay, where, owing to there being little or no rise and fall of tide, it has been allowed to concentrate during the centuries that have passed since the foundation of the city. When the water is disturbed by screw, by paddle, or by oar, strong and offensive smells are given off, which compel the fastidious to hold their noses.

The streets in the city, although well-paved with stone, are generally very narrow, being so much so in some cases that hand shaking from the windows of opposite houses is almost suggested. The situation of the town, in relation to the harbour and the open sea, is such that all the principal streets run at right angles to one another. This arrangement allows the breezes, which blow from the water, to sweep with cooling effect through the avenues of traffic. The beneficial influence of the winds is, however, largely arrested by the narrowness of the streets, but even this want of width has its advantages, inasmuch as it allows of more shade during the middle of the day when the sun is excessively fierce. It also renders it easy to stretch awnings from house to house across the streets.

The highways in the outskirts or suburbs of the city are of much superior character. Wide roads, open squares, and wooded avenues take the place of narrow streets. Fountains of sparkling water bubbling into marble basins, statues, handsome clubs, hotels, theatres, and other public buildings are frequent; while parks, botanical gardens, palm avenues, and luxurious private residences, bowered in choice tropical vegetation, take the place of the grim forts, busy factories, and substantial dwellings of the city.



The houses of Havana are of massive character, generally of not more than two storeys high. They are built of stone, and have flat roofs. Marble is largely used for purposes of decoration in the building of private dwelling-houses, as well as in more imposing business structures. Most of the houses are more like forts than the private residences of ordinary folk. The walls are thick and strong, the doors are large and heavy enough for a fortress, while the windows are almost invariably barred like those of a prison. Stone steps are provided as the means of access to the upper floors. Notwithstanding the heavy style of the buildings the gaol-like appearance of them is very largely modified by the bright colours with which their walls are painted.

If the drainage of the city of Havana, as already hinted, is bad, the cleansing of the streets is very little better. No gutters are provided in many of them, so that their condition becomes anything but pleasant after a sudden shower of rain. The supply of drinking water to the inhabitants, up to a few years ago, was very little better managed than is the drainage now, and it was only in 1895 that a modern system of providing water was established. A good scheme of drainage for Havana was a few years ago proposed by some American engineers, but has not as yet been carried out.

So important, and so interesting, is the capital of the island of Cuba that it would be no very difficult task to write a volume of considerable size whose pages should be wholly devoted to that city. In the march of progress the cities, founded by the Anglo-Saxon settlers, on the mainland of the Continent of North America, have, by far, outstripped that established by the Spaniards in Cuba; although the foundation of the earliest of the former dates from a period at least a century later than does the birth of Havana. Notwithstanding this fact, however, the Cuban capital has played no inconsiderable part in the development of the world's civilisation, and for considerably more than three hundred years has been more or less industriously engaged in the development of commerce.

Froude, the British historian, has described Havana as "a city of palaces, a city of streets and plazas, of colonnades, and towers and churches and monasteries." Other writers have spoken of Cuba's metropolis in similar terms, and all unite in eulogising the beauty of its situation, the magnificence of its buildings, the importance of its commercial life, and the unique position it naturally occupies in the general economy of the world. Something has already been said of the harbour, of the streets, of the houses, and of the suburban scenes of the city, but much of interest still remains untouched.

If the morality and religious life of a community could be measured as in direct proportion to the number of the

churches and other religious houses and places of worship which it possesses, the inhabitants of Havana would certainly take a high place in the scale of virtue and piety. Froude speaks of churches in Cuba's capital being "as thick as public-houses in a Welsh town," while another writer on Havana suggests that, if some casual visitor (who should only spend one night and one day in the city) were asked what his impressions of it were, his probable reply would be, "Bells, nothing but bells!" At the break of day the inexperienced visitor might very easily be awakened and alarmed by the sudden clanging of bells,

"Jangled, out of tune, and harsh,"

which would make him spring from his bed under the impression that, at the very least, the hotel in which he was sleeping was in flames, if, indeed, some larger and even more terrible conflagration was not raging in his immediate neighbourhood. The startled traveller, however, would soon find that the cause of his alarm was not the sounding of fire signals, but merely the call of the faithful to morning mass. Every street and square of Havana has its church, every church has its bell-turret and bells, while the ringers would seem to be recruited from the most energetic and industrious class of the city, judging from the frantic manner in which they ply their ropes.

Among the various churches of Havana the most interesting, as well as the most important, is that which, originally erected in 1724 as a Jesuit College, was rather more than a century ago (1789) dignified into a centre of diocesan authority. The cathedral is situated in the northern portion of the city, and faces a large open square. The building is of considerable proportions, and of stern appearance, the exterior being very little ornamented. It is constructed of a peculiar brown-coloured stone, much blackened by age. One very large door, with a smaller one on either side of it, all reached by means of stone steps, and situated in the front of the structure, give access to the interior. The two front corners of the building are each provided with a massive square tower. No special architectural beauty attaches to the building, the various niches, cornices, mouldings, and pillars which adorn its façade only tending to emphasise the severe but impressive appearance of the pile which forms, after all, a striking object among the sights of Havana. The interior of the cathedral, although somewhat plain, is no less striking than the exterior. The grand altar and the choir are handsomely ornamented, while the carving of the stalls, as well as the decoration of the various side altars, is described as exceedingly fine. The carved pillars, cornices, and mouldings, which form the ornamentation, are of beautiful polished mahogany, of light and graceful design, and are in many places relieved by rich gilding.

A feature of the cathedral of Havana, of special interest to visitors, and especially to travellers from the United States and Canada, until recently, was the monument in memory of the discoverer of the new world, Christopher Columbus, which adorned its walls. Beneath the floor of the church, in close proximity to the tablet or in the wall itself, behind the inscribed stone, the bones of the great voyager were deposited. Columbus died, so says history, in 1506, at Valladolid, in Spain. His remains were placed in the convent of San Francisco, but in 1513 were transferred to a monastery of Seville. In 1536, the ashes, together with those of Diego Columbus, were again removed, this time to the city of St. Domingo, in the island of Hayti. A century ago, however (1796), the mortal remains of Christopher were carried to Havana, the urn in which they were contained being deposited as before stated in the cathedral church. The tablet to the memory of the celebrated voyager is embellished with a carved figure representing a bust of Columbus, and bears an inscription of which the following is a translation:—

Oh, rest thou, image of the great Colon,  
Thousand centuries remain, guarded in the urn,  
And in the remembrance of our nation.

Various writers have remarked upon the poor quality of the poetic effusion which adorns the resting-place of the discoverer of the New World, and Froude goes so far as to point out that, "the image of the grande Colon is certainly not 'guarded in the urn,' since you see it on the wall before your eyes." Some doubt has been expressed as to whether the ashes, until lately in the cathedral at Havana, are not after all those of Diego, and not of Christopher Columbus, and the people of San Domingo contend that this is so. Within the past few weeks the ashes of the great departed have been again removed and taken back to Spain, where they have been buried with great pomp.

Many hotels of considerable size and importance exist in the city; those run on American principles appear to be the most comfortable and satisfactory.

Most of the better establishments are provided with bathing accommodation. In addition to this convenience, public bathing-houses have been established in various parts of the city which are well fitted up with marble baths, tiled floors, and every desirable luxury. Along the sea shore many salt water bathing establishments have been quarried out of the solid rocks. They are so arranged that the water within the bathing chamber is kept at a uniform depth of some four or five feet, while every wave which breaks on the shore has free ingress and egress, so that the water is continually being changed. Such establishments are a very necessary institution in Cuba, where bathing



in the open sea is rendered most dangerous by the presence of sharks.

Progress about the streets of Havana is made by both visitors and natives in a Cuban carriage of peculiar form known as a "volante." This is a vehicle, the body of which (shaped like that of a handsome cab or victoria) is carried upon long shafts, one end of each of which rests on the axle of the wheels, while the other hangs upon the back of the horse, astride which the driver sits. These conveyances are fast giving place to carriages of the European type.

The island of Cuba has been described as resembling in shape a huge hammer-headed shark. The head is represented by the straight length of southern coast at the extreme eastern portion of the island, the nose pointing due east. The almost land-locked inlet, which forms the harbour of Santiago, is situated at about the centre of the stretch of southern coast referred to, and might almost be said to represent, in miniature, the mouth of the monster to which the island has been likened. The city itself is some four or five miles inland from the entrance, and extends for about a mile along the shore at the extreme north-eastern end of the inlet. It ascends the slopes of the hills for some distance inland, and to a considerable height, reaching in one place to some 200 feet above the level of the sea. The highest-lying portions of the town command enchanting views of the land-locked bay and harbour, while the mountain scenery, by which the city is surrounded, is no less superb. Santiago is situated in the most mountainous portion of the island, many of the hills in the district reaching to a height of from 5,000 to 8,000 feet.

The city is well laid out, the streets mostly running at right angles one with another. Most of the houses are of the one-storeyed type, with flat roofs. The buildings, like those of Havana, are of many colours, while the architecture is often of Moorish character, giving the whole city an Oriental appearance. The harbour of Santiago de Cuba is one of the most remarkable natural features of the island. The entrance is exceedingly narrow, being only some 180 yards wide, and has often been likened to the neck of a bottle. It was this narrow gateway that Hobson, the American naval lieutenant, partially succeeded in blocking by sinking the Merrimac across it. The harbour is both large and deep. It has a length of some seven miles, and is well provided with numerous minor arms or inlets, and has many islands scattered over its surface. Its extent is so ample that an enormous quantity of shipping can find accommodation within its capacious enclosure.

If Havana be looked upon as the London of Cuba, then Santiago may be counted as its Canterbury. As has been before suggested, it is the seat of an archbishop, and is there-

fore ecclesiastically superior to Havana itself. The cathedral is an imposing pile, with an open square in front. It is built on an elevated site, and commands a general and extensive view of the city and its surroundings.

The city of Matanzas, like the province in which it is situated, is both rich and important, and is generally regarded as the second commercial city of Cuba. It is situated on the north coast, at a distance of some seventy-five miles to the east of Havana, from which city it can be reached either by rail, by road, or by steamer. Its foundation dates back to the year 1693, its earliest settlers coming, it is stated, from the Canary Islands. The name, Matanzas, is said to mean literally "slaughter pen."

The city is built along the shore, at the head of one of the many pouch or pocket-like bays which are so common on the coast of Cuba. Two rivers flow into Matanzas Bay, and both of these pass through the city. They are known respectively as the rivers San Juan and Yumuri. Owing, probably, to the silt which is carried into the natural harbour by these two streams, the bay has for years past been gradually choked up with deposit. This has been allowed to take place to such an extent that there is no longer sufficient depth of water to allow ships of heavy draught to come well into the harbour. Many such vessels are, therefore, now obliged to load and discharge cargo in the roadstead. The city itself is bounded on the north by the Yumuri river, previously referred to, and on the south by the stream of the San Juan. The suburbs, however, have extended themselves beyond both of these rivers, which are in places spanned by well-built stone bridges. The eastern skirts of the town are washed by the glistening waters of the beautiful bay which forms the harbour. On the west the city is shut in by hills of considerable height, the flanks of which form the watersheds of the two streams previously mentioned. From the tops of these hills an extensive sight of the city may be obtained, as well as charming views of the beautiful Bay of Matanzas, and glimpses of the open sea beyond. The hills also command extended views of the well-cultivated country inland, more especially of the rolling slopes of the picturesque Yumuri Valley, studded as far as the eye can reach with well-kept sugar plantations and beautiful palm groves.

The city of Matanzas has been described by travellers as being the one and only town in the island of Cuba which gives a feeling of thorough satisfaction to its visitors. Lying as it does at the foot of the hills just mentioned, and being washed by the waters of the charming bay, and threaded by the streams of the two rivers, it naturally possesses a picturesqueness and beauty all its own. Notwithstanding its attractions, however, the city receives less attention from travellers than other Cuban towns,

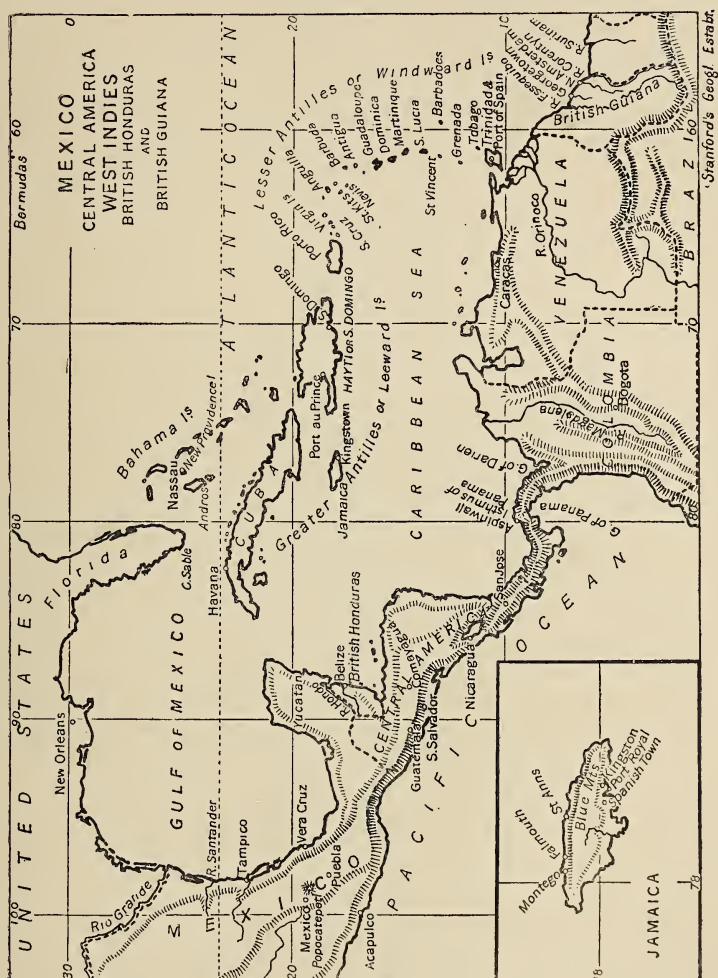
and far less than it properly deserves. It is a specially desirable and pleasant resort for invalids. The streets are well laid out, and are lined in many places with handsomely designed and well constructed buildings. A fine public square, known as the Plaza de Armas, forms a prominent feature of the city. This open space is laid out with gravelled walks, handsome, well-grown shrubberies, and pretty flower beds, which in the season are gay with the mingled brilliance of rich tropical blossoms. In the centre of the square is an imposing statue of Ferdinand VII., while built around its sides are fine offices and dwelling-houses (including those of the principal Government officials), with the addition of large shops and stores, and well-patronised cafés. The city boasts one specially large church, which has been described as an antique old-world looking structure, but with nothing else specially noteworthy about it, except a certain rough architectural grandeur of its imposing towers, one of which has been built to a considerable height, and rears itself proudly above its less elevated fellow. The city of Matanzas also possesses at least one important theatre, which institution at the time of its construction was superior to anything of the kind to be found elsewhere in the island, and quite equal to some of the finest of either Europe or America.

The population of Matanzas is, according to the latest estimates, about fifty thousand. The inhabitants are described as a polished and highly hospitable people. As was indicated in an earlier paragraph, many of the original inhabitants of the city come from the Canary Islands, and it would appear that this particular type of humanity has left its mark specially upon the citizens of Matanzas. Froude, speaking of some of the inhabitants of Havana, says, "You know the people of Teneriffe by their stature; they are the finest surviving specimens of the old conquering breed." Many of the citizens are very wealthy, as is evidenced by their luxurious and imposing dwellings. In the newer portions of the suburbs this condition of life is specially marked, and in these districts are numerous palatial mansions, with imposing pillared fronts and massive porticos, surrounded with luxuriant and well-kept flower-gardens, and pretty plantations. The women of Matanzas have been described as remarkably beautiful.

One of the great attractions of the city of Matanzas is a group of large natural caverns—the Caves of Bellamar—which are to be found in its neighbourhood. These are situated at about two and a half miles distance from the city, and form an attractive item in the sight-seeing programme of the traveller. The caves are reached either by means of a "volante," or on horse or pony back, the road running for some distance along the shores of the beautiful bay. After some little distance has been passed the road turns inland, and the hills are then climbed



to the plateau above by means of a somewhat rough, rocky and tortuous path. The caverns are of enormous extent, and hours may be very easily spent within them in visiting the various points of interest. Bridges, planked pathways, and railings have been provided at all dangerous places, so that the tourist



may have no fear of accident from a sudden and unexpected slip. One of the special features of the caves is an immense natural chamber some two hundred and fifty feet long, by seventy feet wide, and known as the "Gothic Temple." This immense chamber is said to by far surpass in splendour the great natural

cavern bearing the same name, and found in the famous Mammoth Caves of Kentucky. It is described as of great beauty, its millions of crystals reflecting all the colours of the rainbow, when lit up by the light of the candles carried by its explorers. One writer speaks of a visit to the Cuban caves as a dream of fairyland. The caverns, it is stated, extend underground for a distance of some three miles, and reach a depth beneath the surface of at least five hundred feet. They were accidentally discovered about thirty years ago, and have ever since been one of the great attractions of the island. It has been well said: "Who has not seen the Caves of Bellamar has not seen Cuba."

The three great cities of the Cuban island, dealt with previously, are in each case important seaports, and are, therefore, much better known to outsiders and to travellers than are the interior towns. Nevertheless, several of the cities of Cuba, which are situated well inland, and practically beyond the reach of the average visitor to the island, have an importance and interest little if any less in many respects than have those so easily reached from the sea. The capitals of three out of the six provinces, viz., Puerto Principe, Santa Clara, and Pinar del Rio, are inland towns.

The first of these three is situated on a plain, and is almost exactly in the centre of the province designated by the same title. It lies at about an equal distance from both the northern and southern shores of Cuba, its position being also approximately one-third of the length of the island from its extreme eastern point. The town can be reached by railway from Nuevitas, a port on the northern coast of Cuba, the distance between the two places being roughly some fifty miles. No connection exists between Puerto Principe and Havana, or any other of the great towns of the island, except by boat by way of Nuevitas, unless it be tediously by the carriage road which, in a more or less winding manner, runs from Havana to Santiago de Cuba, passing through Puerto Principe by the way.

Puerto Principe has a population of more than forty thousand souls, and this fact alone speaks for its importance among the towns of the island. Its foundation dates back to the year 1516, and its site before that time was occupied by an Indian village, bearing the name of Camaguey, by which title native Cubans still know the more modern city. The town is described as probably the oldest looking and quaintest in Cuba, and suggests the period of the middle ages rather than the present day. The style and dress of its inhabitants tend to increase rather than diminish this impression. Camaguey, or Puerto Principe, to give it its official designation, is described as the most creole of all Cuban towns. The streets of the city are narrow and winding, they are also mostly quite unpaved, and possess no side walks. The buildings generally, as previously

suggested, are of quaint appearance. There are a number of peculiar looking old-world churches, several convents, large barracks for the soldiers, at least one theatre of moderate size, and imposing blocks of Government offices and official residences.

The district surrounding Puerto Principe is a grazing country, the rearing of horses and cattle forming the principal industry of the neighbourhood. Enormous herds of cattle are reared on the plains, and are duly despatched to the various markets of the island. Many of the fiercest bulls, which appear in the bull-rings of Havana and other cities of Cuba, are bred in the Puerto Principe district.

Santa Clara, more properly designated Villa Clara, is situated as nearly as possible in the centre of the island of Cuba, and is the capital city of the province bearing the same name. Its distance from Havana is about 250 miles, and it is connected to that city, as well as to Matanzas, by railway. It is also connected in the same manner with the port of Sagua la Grande on the north coast of the island, with Cienfuegos on the southern shore, as well as with the city of Trinidad. Villa Clara has a considerable population, stated by one recent writer to be almost 35,000. The feminine portion of the inhabitants of this city have been extolled by some writers for their great beauty. The town itself is of considerable age, having been founded over two hundred years ago, and has, therefore, many interesting historical associations. Considerable mineral wealth affords a large part of the commercial prosperity of Santa Clara, gold, copper, and plumbago being among the products of the district. A short distance from the city large quantities of gasoline exist, and in one year no less than 10,000 tons of asphaltum have been shipped.

The province of Pinar del Rio is the most westerly of all the provinces of Cuba. The capital city, which bears the same name as its mother province, is situated at about the middle of the district, but close to its southern shore, near to Cortez Bay. The city itself is of no great importance, having a population of only some 5,000 or 6,000 inhabitants. It is 150 odd miles distant from Havana, and is connected with that city by railway. Pinar del Rio obtains what importance it possesses from being the centre of the most extensive tobacco growing district of the island. In this neighbourhood all the finer qualities of the Cuban weed are cultivated with the greatest success, and these in due time fetch the highest prices in the markets of the world. The subsidiary products of Pinar del Rio are sugar, coffee, cotton, corn, rice, and various fruits.

Many of the other cities of the island are well worthy of notice, and much of interest might be said with regard to them. Cienfuegos, Cardenas, Santo Espiritu, Sanguala Grande, with



populations varying from twenty-seven thousand to fourteen thousand, and several other places of almost equal size, would afford much scope. The general geographical and topographical features of the island might be very considerably enlarged upon. The resources of Cuba (now merely touched upon) are simply incalculable, and the island has been well described as one of the richest in the world. Given peace and security, its possibilities are enormous; and under a just, progressive, and liberal system of government, Cuba, it may be believed, would rapidly justify her title to be called "Queen of the Antilles."

---

## NEW BOOKS.

---

"BIBLIOTHEK DER LÄNDERKUNDE," Herausgegeben vom A. KIRCHHOFF und RUDOLF FITZNER. Band 1: Antarktis. Von Dr. Karl Fricker. 230pp. Index, map, and many full page and small illustrations. Berlin: Schall und Grund. 1898.

THIS is a most interesting and valuable monograph on the Antarctic World, and is issued at an opportune time.

The story of discovery is well told and covers most of the ground, and the selection of the illustrations is most apposite. A very useful list of works on the subject is added. The map is a very clear one, and the small inset maps in the text add to the value. The forms of Antarctic ice are well given. The physical geography and the scientific objects sought to be accomplished by South Polar exploration and an account of the flora and fauna are also given.

It is an admirable compilation of facts which are not very accessible, and the monograph is of great value.

"UNE MISSION FRANÇAISE EN ABYSSINIE." Par S. VIGNÉRAS. 224pp. Sixty engravings from photographs by the Author. Paris: A. Colin et Cie. 1897. Price 4 francs.

THIS is an interesting account of the journey of M. Vignéras from the Red Sea, by Harrar, to Addis-Ababa, and thence returning to Jibonti. The story of the journey is well told, and the large number of illustrations, small but very clear, add to the interest of the narrative. The book will well repay perusal.

The French Mission interviewed the Emperor, and the small pictures are striking. There is no map and no index.

# OUR INDIAN EMPIRE :

WITH PERSONAL REMINISCENCES OF A TOUR FROM  
CHARING CROSS TO THE NORTH-WEST FRONTIER.

By E. F. G. HATCH, M.P.

[Addressed to the Society, at the Manchester Grammar School, Friday, March 17th,  
1899.]



IT must not be supposed that, because the words occur in the title of this lecture, I intend to deal, in any sense exhaustively, with the subject of our Indian Empire. Such an attempt would be far too serious a matter to be compatible with an evening's entertainment. I purpose rather to impart to you the effect which a first visit to India has on the mind of a

traveller; to take you, in the first instance, rapidly from London to Bombay—thence to the places of note that I visited—and by showing you some of the typical sights that are to be seen there, to leave the picture of India, with its glorious tone and colour, to unfold itself.

Starting, then, from Charing Cross Station, and, travelling *viâ* Dover and Calais, we in due time reach Marseilles, the great commercial port of France in the Mediterranean, and the place of call for the Peninsular and Oriental steamers. The one destined to carry us on our journey is the fastest of all—the Caledonia—a splendid vessel, which can do the run from Marseilles *viâ* Brindisi and the Suez Canal, in 14 days.

Brindisi is a very ancient port in Italy, on the Adriatic. It was called by the Romans Brundisium, and was the terminus of the great Appian Road that connected it with Rome. It is now a small town, but one still of considerable importance, owing to its being the port where the overland mails from Europe are shipped on board our steamers for India. It is, indeed, for the mail that we have called, and there is time enough for a ramble on shore to look at the old Roman ruins. If we are in luck we are likely enough on our return to find some of the Custom House officers at work. To an English mind they are an excitable race—characteristically officious and self-important. It is extremely unwise, if there is little time to spare, to arouse their suspicions by even the slightest contravention of red-tape regulations. It may prove to be nothing, but inevitably results in much ado.

By evening the mails are shipped, and soon we are again ploughing through the Mediterranean. Passing the Ionian Islands and Crete, we arrive in no long time at Port Said. Here we stop for a few hours to coal, and to avoid the griminess of it, it is as well again to go ashore for awhile. The town is essentially Egyptian—dirty and hot, very bad hotels, and rascally shopkeepers. If they show you a number of articles for sale at, say, 7s. 6d. apiece, it is dangerous to offer 10s. for the lot, as they are apt to say done, and you are done.

As soon as the coaling is over we start again, and slowly enter the Suez Canal. This great engineering feat of the nineteenth century was due to the genius of that gifted Frenchman, M. Ferdinand de Lesseps, but destined—since 63 per cent of the ships using the canal are British—to be of more use to the British Empire than to all the nations of the world combined. It took exactly ten years to complete, and consists of a cutting through the sand averaging 260ft. wide, 60ft. deep, leaving a waterway of about 170ft. wide and 26ft. deep. These cuttings connect several lakes and natural hollows which occur on the route. The beds of the lakes have been dredged, and the



hollows have been deepened to form the navigable channel from one sea to another. The dues for vessels passing through are about 8s. per ton, and the toll therefore paid by the Caledonia—7,700 tons—will amount to over £3,000. The canal from end to end measures 88 miles, and its construction has reduced the journey from Western Europe to India, which was formerly *viâ* the Cape, by nearly 4,000 miles. The importance of the canal may be estimated by the fact that the shares which in 1875 England bought for £4,000,000 are to-day worth £24,000,000, and yield a proportionate revenue to the country. The great parallel in this class of engineering enterprise is one for which Englishmen may claim entire credit, the Manchester Ship Canal.

The time occupied in passing through the canal is about 14 hours, and the dead calm of it is, after the almost invariable tossing of the Mediterranean, most acceptable to inexperienced passengers. The Red Sea, into which it leads at Suez, may also be more or less relied on for smoothness, and social life on board begins. The decks are strewn with chairs, not infrequently resulting in a block in the thoroughfare. A committee of those energetically inclined is formed to organise amusements, and the result of their labour declares itself in races, tournaments, fancy dress balls, concerts, and any other entertainment that can be devised to while away the tedium of irresponsible existence.

The next port of call is Aden, one of the many coaling stations for our fleet which stud the ocean highway from Britain to India and the far East—Gibraltar, Malta, Singapore, Labuan, Hong Kong, are the other principal ones. Their importance cannot be exaggerated, for in these days of steam on them depends the efficiency of a fleet. A great naval battle may be lost, or a fleet overtaken and destroyed, not for lack of bravery in the sailors or strength in the ironclads, but for lack of coal.

There is not much in Aden to see, so our passengers turn their backs upon the town and its volcanic rock, and devote their attention to the more interesting natives who swarm on board with a rich assortment of baskets, feathers, fans, etc., for sale. One great source of amusement are the diving boys at Aden. Throwing off their lethargy as the passengers appear on deck, these boys crowd round the rails, crying: "One shilling," "Two shilling," and as these coins are thrown into the clear and deep waters of the bay they dive down after them and invariably succeed in catching them before they have gone far. If the money is not forthcoming they endeavour to stimulate interest by adding the words, "Plenty much shark;" and, indeed, the waters in the bay swarm with these terrible monsters of the deep. They, however, will very rarely touch a native, and these boys therefore dive with comparative impunity

into waters which for a white man would contain a certain and horrible death.

From Aden we steam direct to Bombay, which we reach in four and a half days' time, and, as this will be our first glimpse of the peninsula, it will be here appropriate to describe to you as shortly as possible what India is.

Let me, therefore, call your attention to the map of India. From Cape Comorin in the South to the Himalayas in the North the distance is some 2,000 miles, and, in its widest part, if you include Burmah, a similar distance separates Beloochistan from its Eastern boundaries. Its area extends over 1,700,000 square miles, and, exclusive of Burmah, may be divided roughly into three regions. To the North, right across from West to East, the vast range of the Himalayas stretch for some 2,000 miles, and include within its limits many countries, such as



MOUNT EVEREST.

Cashmere, Kumaon, Nepaul, Sikkim, Bootan, and Assam. Its highest peaks, as, for example, Mount Everest, rise 28,000ft. and more, and are covered with perpetual snow.

It must not, though, be supposed that the entire range is of a uniform character. As a matter of fact, as you ascend the Himalayas from their base you find every variety of climate, from the Tropics to those of the Temperate and Arctic Zones, and the vegetation varies with the climate.

The next region is one vast alluvial plain, covering with its 500,000 square miles the greater part of the Province of Bengal. In the middle of this plain lie Oudh and the North-West Provinces, and to the West the Punjab, Rajputana, and Sind. This great tract is watered by the river systems of the Indus, the Sutlej, the Jumna, the Ganges, and the Brahmaputra; and,

except in Rajputana, where the want of water makes the place a desert, the soil is unparalleled for fertility, and supports a population of over 150 millions, or about one-half of the entire population. To the South of these plains, with the exception of a broad strip along the Eastern coast, the country becomes a lofty, and, in the main, rugged tableland, including several Native States, such as Hyderabad, and Mysore, the Central Provinces, and the Presidencies of Bombay and Madras.

The country is divided into 12 great provinces, directly administered by the British Government, and no less than 150 feudatory states and principalities, which are ruled by native rajahs and princes, but none the less come indirectly under British influence. The population, subject to our Most Gracious Majesty, number some 300,000,000, of which the Mahometans amount to about 57,000,000, or twice as many as there are under the sceptre of the Sultan of Turkey; and the Hindoos, to use a general term, to about 207,000,000. The remainder are of many minor races, such as Sikhs and Parsees. It must not be supposed though that these are animated by any spirit of nationality, as we understand the phrase in Europe. They are rather a conglomeration of innumerable sects, brotherhoods, and families differing in race and religion, and speaking as many as 78 languages. Had the case been otherwise, it would have been impossible for a handful of Englishmen either to have won or maintained the mastery. In fact, it has been well said that England never did conquer India. Consequent on the fall of the great Mogul Empire the country was thrown into a state of chaotic confusion; rival after rival aspired to the power, and everywhere petty chiefs were striving to assert their independence; in a word, England but guided a revolution that she found in progress.

How this was effected we need not stop to enquire, and for the rest I think I have sufficiently drawn your attention to the variety of clime, country and population, so necessary for the traveller to realise. We need, therefore, delay no longer in starting on our tour.

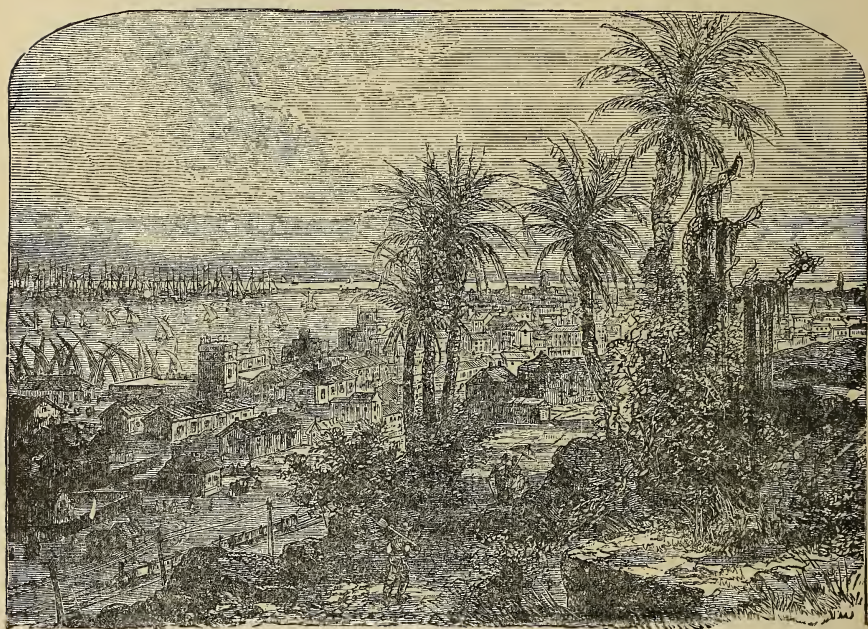
After pausing awhile in Bombay, we shall visit in turn Calcutta, Benares, Cawnpore, Lucknow, Agra, Jacobabad, Peshawur, the Khyber Pass, and, lastly, the native States of Jummo and Kapurthala.

The city of Bombay, situated on a beautiful bay, as its very name, Bom Bahia, implies, presents a remarkable panorama. This great city and capital of the Presidency of Bombay was a possession of the Portuguese, first occupied by them in the year 1532. In the year 1661 it was ceded to the English Crown as part of the dowry of the Infanta Catherina on her marriage to Charles II. So lightly was the acquisition deemed then in England, and so unsuccessful was the admini-



stration of the Crown officers, that in 1668 Bombay was transferred to the East India Company for an annual payment of £10. The population at that time did not exceed 10,000, and the town was so unhealthy that three years were regarded as the average life of its European inhabitants. To-day the population is nearly a million, and it is the great mercantile port of India.

Of the many modern buildings of note in Bombay the Railway Station may be regarded as one of the most striking. It is the finest station, except St. Pancras, in the world. It cost £300,000, and is a fitting monument to the unbroken prosperity



BOMBAY.

which the Great Indian Peninsula Railway Company has enjoyed for the last quarter of a century.

And here let me very briefly call your attention to the vast improvement that has been effected by England in the establishment of thorough means of intercommunication. In early days, even in the palmiest of the Mogul Empire, no large engineering works were attempted. Such a thing as a practicable road—and much less railways and telegraphs—was non-existent; but for England they would be non-existent still, and India no further advanced than China is to-day. But there they are—a thorough network, and their importance is simply incalculable.

By enabling the rapid concentration of troops they have more than doubled the efficiency of the army; by their means, in times of famine, food can be transported rapidly from the districts that have a surplus to the districts that are in want, where formerly starvation could only be accepted with resignation. Their very manufacture and working has employed, and still employs, thousands of labourers, and the general impetus that they have given to trade of every description, and to the development of new ones, such as those of cotton and tea, it is easier to imagine than express. On these points I must not dwell at length, interesting though they undoubtedly are. I merely throw them out as suggestions indicative of the beneficial effects of British rule in India.



THE MUNICIPAL HALL, BOMBAY.

Of the various races inhabiting Bombay the Parsees are the most influential. They are of Persian origin, and, though small in numbers, the whole community being under 100,000, they are among some of the wealthiest merchants in India. One striking illustration of their wealth is that they boast that, of their whole community, not one is a menial servant.

Parsees are often spoken of as fire-worshippers, a term which they rightly repudiate with indignation. They are Theists. God, according to the Parsee faith, is the personification of glory, refulgence, and spiritual life, and it is merely as the most fitting symbol of the Deity, that the Parsee, when praying, either faces the sun or stands before the fire.

The Parsees have a curious system of dealing with their dead. They do not bury in the ground; the earth is one of

the four sacred elements which they venerate, and to use it for burial purposes would defile it. Neither would they throw a body into the sea, which we do at times; nor into a river, for that would defile the water—another of the elements. Nor could they possibly burn their dead, which the Hindoos are in the habit of doing, for that would defile the fire, which to them is, as we have shown, peculiarly sacred. To cope with this dilemma they build a tower, without a roof, known as the Tower of Silence, and the dead are placed on a platform within so that they are out of sight, and yet there may go through the process of decay. This would, no doubt, under any circumstances be rapid in a hot climate like India; but the rapidity is assisted by a colony of vultures, who keep possession of the palm trees, and are ready to swoop down whenever a funeral procession is admitted within the walls.

On a first introduction to India it is impossible not to be struck by the customs of native women. If out of doors, a lady's face is never seen by any one; she is strictly and closely veiled by a hood. At home she is never seen by any man but her husband and her very nearest relatives, such as her father or brother. Any intrusion into her seclusion would be resented and strike her with horror, and her training is such that she prefers this life of complete separation from mankind. It should be remarked that I am referring now to the higher-caste woman, and not to the workers in the fields or the town. Indeed, so strong is the feeling of preference for purdah, as the custom is called, that one incident—a type of many such—may be quoted in illustration of this custom. A native with his wife had worked hard and succeeded in attaining a good position, when the latter at once sought the seclusion of purdah. Why? Because purdah life gives the woman a superior status in society. What a contrast to the women of Europe, who, although rejoicing in their homes, yet avail themselves in society of their undoubted power to stimulate and encourage the men by their presence at out-door gatherings.

Our next visit is to Calcutta, the capital of India and seat of the supreme government. Large commercial interests are involved in this great city, which derives its name from the Hindoo title "Kallee Ghattah," the ghaut or landing place of the goddess Kali, whose temple, situated about two miles from the present city, is one of the most celebrated shrines in Bengal.

It seems strange to think that in 1596 it was rated as a small village in the survey of Bengal executed by the command of the Emperor Akbar (the Great Mogul). It was not until 100 years after that it emerged into history. In 1686 an English factory was established here, and in 1696 the East India Company made it their headquarters. They built Fort William,



and in 1700 purchased the three villages of Sutanati, Calcutta, and Gobundpur from Prince Azim, son of Aurungzebe. From such a small beginning rose the great capital city we see to-day, with upwards of a million inhabitants. The chief event in the history of Calcutta was the sack of the town and the capture of Fort William in 1756 by Surij-ud-Daula, the Nawab of Bengal. The majority of the English officials took ship and fled to the mouth of the river. The Europeans who remained were compelled, after a short resistance, to surrender themselves to the tender mercies of the young Prince. The prisoners, numbering 146 persons, were driven at the point of the sword into the guardroom, a chamber scarcely twenty feet square, with but



BENARES.

two small windows. Next morning only twenty-three were taken out alive, among them Mr. Howell, who afterwards told the dreadful story of the Black Hole of Calcutta. There is no vestige of this building now remaining, only a slab to commemorate the spot. On its site has been built the Post Office, a magnificent building, and once more a standing testimony to English civilisation.

The next place of interest to which I would introduce you is Benares, the Sacred City of the Hindoos. It is the fifth city of India in size and population, and its existence to-day as the Mecca of the Hindoo faith is typical of British tolerance towards all matters religious. To quote Sir Alfred Lyall, the greatest

authority on the subject: "Hindooism is a tangled jungle of disorderly superstitions, ghosts, demons, demigods, and deified saints—household gods, tribal gods, local gods, universal gods, with their countless shrines and temples, and the din of their discordant rites." Here at Benares it is at its zenith. The River Ganges, for instance, is worshipped as sacred, and there is no sin so black that it cannot be washed away by bathing in its waters. If you row slowly down the stream a remarkable scene presents itself—a panorama of palaces, temples, and mosques, surmounted by domes, pinnacles, and minarets, stretching three miles along the banks; from these descend great flights of stone stairs, broken into wide platforms, on which are built shrines, bathing houses, and preaching canopies.



THE ELEPHANTA CAVES.

These "ghauts," as they are called, are alive with pilgrims from every part of India, performing their ablutions, or collecting the precious water to carry back to their kindred in far-off provinces.

Besides the bathing ghauts there are also many burning ghauts, where the Hindoos cremate their dead; the Hindoo idea with respect to the immortal part of man is a strange jumble—very indefinite and uncertain on the main point, extraordinarily dogmatic as to side issues. To die in Benares is to secure immortality. To have no son to close the eyes is to ensure another period of perhaps bitter probation in this world. To die on the banks of a sacred river is an essential to everlasting bliss. To burn the body and send the ashes down the stream



is to put the soul on the highway to heaven. The face is exposed and painted in gay colours. Men playing on screeching native pipes, and a tom-tom, or native drum, frequently head the procession on its way to consign the corpse to the flames.

The stirring incidents of the Mutiny are too well known to you to necessitate my going into them in detail, but there are two sights in connection with them to which I must refer—the one commemorating the most inhuman act of treachery, the other the scene of the most heroic defence that history records. First, the Memorial at Cawnpore—a draped angel carved in white marble, sacred to the memory of the terrible massacre there—a massacre so terrible that the Nana's soldiers, brutal as they were, refused to perpetrate it, and the work was done by butchers hired from the shambles; and then the Residency of Lucknow, held in the face of starvation and overwhelming odds by a handful of desperate Englishmen. Many a noble life was spent: night and day the fighting and alarms continued without ceasing. The heat was insupportable: nearer and nearer were drawn the deadly lines of the rebels, but, as Tennyson so finely puts it,

“Ever upon the topmost roof our banner of England blew.”

It was flying still to greet the relieving force when it at last arrived.

Our next visit is to Agra, the most interesting place in all India. It marks as no other city does the crowning period of the Great Moguls, and testifies to their wealth, their power, and the grandeur of their ideas. Its magnificent Fort was built by Akbar the Great, when in 1566, in the time that is of our Queen Elizabeth, he there established his seat of government. It stands to-day as it stood then with its red battlements still uninjured. As you look at it you cannot but realise the stupendous scale on which the Great Mogul Emperors could build. Situated on rising ground, with walls 70ft. high, it dominated the River Jumna and the surrounding plain, offering an impregnable barrier to all arms of offence as known in those days. But for art and splendour it is to the Taj Mahal that we must turn, the glorious mausoleum dedicated by Shah Jehan to the memory of his beloved Empress, and known on account of its superlative grandeur and beauty as the eighth wonder of the world. The entrance gateway is a superb specimen of architectural design. It is of red sandstone, inlaid with floral designs and passages from the Koran in white marble. The roof is adorned with Moorish cusped arches, kiosks, and pavilions. Passing through this splendid entrance, which is 140ft. high and 110ft. wide, the eye travels down an avenue of sombre cypresses, the floor of which is a tank of white marble with water about a foot deep and reaching away for 300 to 400 yards. This lovely





vista closes in with a dome of white marble, posed on a building which, with its perfect symmetry and absolute finish of every detail, flashes like some priceless jewel in the glorious blue setting of the Indian noon-day sky.

The Taj was completed in the year 1648. It is said that when the beautiful Empress was on her deathbed she preferred two requests to her husband, the one being that he would never marry again, and the other that he would erect such a memorial of his wedded love as no husband had ever placed over the remains of his wife. Whether this be correct or not, the fact remains that he did not marry again, and that this perfect structure sprung into existence to be for ever the memorial of his undying affection for his consort. It may well be said words are worthless in describing a building which, as a whole, whether in its design, its details, or its surroundings, is absolutely faultless. Twenty thousand workmen were employed for twenty years in building and decorating the Taj Mahal. Its cost was about twelve millions sterling. The Albert Memorial in Hyde Park is said to have cost only £40,000.

The interior of the Taj is no less remarkable than the exterior. There the Shah Jehan and his beloved Queen lie buried side by side in marble tombs, inlaid with rich gems, and enclosed by double screens of white marble trellis work of the most exquisite design and workmanship. In England a building thus obscured would be gloomy and dark, but under the blazing sun of India, the glare that would otherwise be intolerable is only tempered, and there is plenty of light to see the infinite lace-like details of the wondrous tracery. But, glorious as it is by day, in the calm of an Eastern night the Taj is a thing to dream of. In the silver dress of the moonbeams it is even more beautiful than in the golden robes of the noonday sun. By day and night alike it makes an impression on the memory that nothing can obliterate.

I will next take you to Jacobabad in the north of Sind, where I went to attend the investiture of the Amir of Khairpur by the Governor of Bombay. The ceremony took place in a huge pavilion, where, tier above tier on either side, the native notables were seated. The dresses they wore were all excessively rich, and the blending colours gave the sight an effect as radiant as it was picturesque. Presently H.E. the Governor-General of the Bombay Presidency appeared, and took his seat upon the throne. The investiture then began, and amid the saluting of guns, the robes, the ribbon, and star of the order was put on.

The prosperity of Sind is due entirely to irrigation, without which it would be a desert like Rajputana. Practically speaking, it never rains there, and for water supplies the country depends entirely on the River Indus. The early inhabitants



cut channels to a certain extent, but these were primitive and could only be used in flood time. The works carried out by the British Government are on a very extensive scale, with a proper system to draw off the water at all seasons of the year. The cultivators are charged for the supply at the rate of from 3 to 5 rupees per acre, and to such good purpose is the use they make of it that the annual return to Government is as much as 7,000,000 rupees, or say, £470,000 sterling.

The great danger to which India is liable is famine, caused by the failure of the periodical rains, and the protection afforded by the construction of a complete system of irrigation is another debt that India owes to England. The most important instances are those which distribute the waters of the Ganges through that part of the North-West Provinces, between the Ganges and the Jumna, called the Doab, and those on the Jumna in the Punjab. The annual value of extra crops raised by their means amounts to many millions sterling.

From Jacobabad we proceed to Peshawur, an important town, situated in the extreme north-west corner of India, and recently the centre of the seat of war on the frontier. It is built on a plain, 1,068ft. above the sea, and is surrounded by a wall 10ft. high. Here we find ourselves encircled, except on the south-east where the Indus flows, by mountains, and it was a few miles from here, at Fort Ali Musjid, that the rising of the Afridis and other tribes took place, and brought about the loss of the Khyber Pass, and the subsequent war and expedition to Tirah.

The difficulties encountered by our vast army were prodigious. The men fought well, but the Afridis are wonderful shots—some say better than the Boers were in 1881. They were quicker in moving over the country than our soldiers. They knew every inch of the ground, while to us it was unknown. They carried no transport; our transport extended, when passing up the mountains, from ten to thirty miles, and offered exceptional opportunity for “snipping,” the enemy’s ordinary method of warfare.

To the north-west of Peshawur lies the State of Cashmere, governed by a quasi-independent native prince. The Palace of the Maharajah, in which he entertains his guests, is a magnificent building, and, after roughing it so long—in camp, under canvas, by train, etc.—it is very comforting to arrive at a palatial residence and find every luxury and consideration provided. The Maharajah, owing to scruples of caste, never eats with anyone outside his own religion; but his care for his guests is unexceptionable. Every delicacy of the very best is at their disposal, and they are served with the most deferential respect.

An instance of the real power of these native rulers is to be found in the armies which, under the title of “Imperial Service



Troops," they raise and maintain at their own cost. The total number of these troops is about 50,000, and they are drawn from Mahomedans, Hindus, and Sikhs alike. This fine body of experienced soldiers are placed entirely at the disposal of the British Government, and are under British inspection; they are as ready for service for the Queen and Empress as are our own native troops in India. Several regiments served with great distinction during the recent risings on the north-west frontier, and it is with a thrill of patriotic satisfaction that one observes how many of them wear the medal for Chitral, Gilgit, or the Order of Merit, which to a native soldier is equivalent to the Victoria Cross.

Jummoo is a native State pure and simple, and the Maharajah's rule, provided it is not antagonistic to the British Raj, is supreme. Without the sanction of the Indian Government he may not raise the strength of his army, but over his subjects he has the power of life and death.

The Sikh state of Kapurthala is also well worth a visit. The Sikhs are most loyal subjects of the Crown, and since their conquest have never failed us; all through the great Mutiny they remained faithful, and fought side by side with us. They regard us as chivalrous foes who have beaten them in many a tough battle, and they entertain the chivalrous respect that brave opponents feel towards one another.

And now, ladies and gentlemen, I bring my lecture to a close. I have endeavoured, so to speak, to take you on a personally conducted tour to some of the chief points of interest in our Indian Empire, and by illustrations to bring home to you something of the tone and colour of its environment. I have incidentally drawn your attention to the limitless variety of the climate, vegetation, and configuration of the country, and the variety, in every sense of the word, of its immense population. It has often been questioned whether we have any right to be there. As I have said, the chaotic state of the country which rendered it possible rendered it justifiable also: that we have not lightly regarded the heavy responsibilities we assumed is evidenced by the peace and prosperity of the land. On the frontiers there must from time to time be small wars, or punitive expeditions, but these, as well said by an eminent statesman, are but the surf which must, however calm the ocean depths may be, break where it meets the land. Famine must occur from time to time, but by our railways, roads, irrigation, and relief works, we are in a position to combat it. In a word, I cannot but think that our government of India has vindicated our possession.

## COPY OF LETTER TO BRITISH GEOGRAPHICAL SOCIETIES AND OTHERS.

---

### GEOGRAPHICAL AND COMMERCIAL MUSEUM CONFERENCE.

---

THE Report of the Conference will be found in *Journal*, Vol. xv., p. 133.

To assist the other Societies we have had a list of the contributions towards this object made to this Society.

This list will serve two objects—

1. The list shows the matters we have on exhibition and for use.
2. The list may be useful as *suggesting* to our friends the matters needful to make the collection more complete.

The Secretary (*pro tem.*), Mr. Sowerbutts, will be glad to have the names of the delegates to complete the Committee for further development.

#### ARCHEOLOGY.

Roman Wall, Castlefield, two pieces.

Roman Bricks, Deansgate, two pieces.

Belgian Brick, modern.

Belgian Brick, old, from Rupplemonde Castle.

Belgian Brick, old, small, from Rupplemonde.

Ruabon Pressed Brick.

Various and numerous specimens of Roman Pottery from Deansgate and other places in Manchester.

#### GENERAL.

Philip's Patent Orrery.

Philip's Patent Planisphere.

Model of Fox.

Elephant's Foot (on loan).

Berne Cowbell (one of eight).

Ordinary Shuttle.

Table Knives, and how they are made, with 10 specimens.

Two Flags (one Union Jack).

Water from Salt Lake, United States of America.

Loom Shuttle.

Loom and Shuttle, with warp and weft, Solomon Islands.

Paris, Model of Eiffel Tower.

American Watch, self-winder.

Uriya or Oriya MSS. for Charm.

V. da Gama's Handkerchiefs, two small ones, one large one.

Andree's Handkerchiefs, two specimens.

Swiss Maps, two samples on cotton handkerchiefs, one printed with physical and one with political map.

Handkerchief (Lion of Norway).

Japanese Paper, four specimens.

GRASSES.

Raw China Grass, as imported.  
Green Rhea, badly treated by a dry process.  
Green Rhea, degummed fibre.  
Green Rhea, first quality double-combed sliver.

E. J. ARNOLD AND SON'S OBJECT LESSON CABINET.

No. 3.—NATURAL PRODUCTS.

- |                                     |  |
|-------------------------------------|--|
| 1. White Wheat.                     | 54. Blade or Whole Mace.                 |
| 2. Red Wheat.                       | 55. Nutmeg.                              |
| 3. Bran.                            | 56. Cloves.                              |
| 4. Whole Meal.                      | 57. Long Pepper.                         |
| 5. White Flour.                     | 58. Black Pepper.                        |
| 6. Macaroni.                        | 59. White Pepper.                        |
| 7. Vermicelli.                      | 60. Cayenne Pods.                        |
| 8. English Barley.                  | 61. Capsicums.                           |
| 9. Malt.                            | 62. Pimento or Allspice.                 |
| 10. Pearl Barley.                   | 63. Hops.                                |
| 11. Barley Meal.                    | 64. Black Tea.                           |
| 12. White Oats.                     | 65. Coffee Beans (unroasted).            |
| 13. Black Oats.                     | 66. Coffee Beans (roasted).              |
| 14. Crushed Oats or Rolled Oats.    | 67. Ground Coffee.                       |
| 15. Rough Oatmeal.                  | 68. Cocoa Beans.                         |
| 16. English Rye.                    | 69. Cocoa Nibs.                          |
| 17. Rye Meal.                       | 70. Rock Cocoa.                          |
| 18. French Buckwheat.               | 71. Cocoa.                               |
| 19. Maize or Corn Cob.              | 72. Chicory Root.                        |
| 20. Flat Maize.                     | 73. Roasted Chicory.                     |
| 21. American Maize.                 | 74. Walnuts.                             |
| 22. Hominy or Ground Maize.         | 75. Barcelona or Hazel Nuts.             |
| 23. Paddy or Rice in the Husk.      | 76. Brazil Nuts.                         |
| 24. Rice.                           | 77. Jordan Almonds.                      |
| 25. Ground Rice.                    | 78. Shelled Almonds.                     |
| 26. African Millet.                 | 79. Senna Pods.                          |
| 27. Indian Millet or Durrah (Dari). | 80. Senna Leaves.                        |
| 28. Starch.                         | 81. Cinchona Bark or Peruvian Bark.      |
| 29. Penang Tapioca.                 | 82. Iceland Moss.                        |
| 30. Bullet Tapioca.                 | 83. Chamomiles or Camomiles.             |
| 31. Pearl or Seed Sago.             | 84. Kola (or Cola) Nut or Guru Nut.      |
| 32. Arrowroot.                      | 85. Barbary Aloes.                       |
| 33. Broad Beans.                    | 86. Poppy Heads.                         |
| 34. Field Beans.                    | 87. Spermaceti.                          |
| 35. Dwarf French Beans.             | 88. Indigo.                              |
| 36. Scarlet Runners (Kidney Beans). | 89. Cochineal.                           |
| 37. Peas.                           | 90. Logwood Chips.                       |
| 38. Whole Lentils.                  | 91. Oak Bark.                            |
| 39. Split Lentils.                  | 92. Nut Galls or Oak Nuts or Oak Apples. |
| 40. Sugar Cane.                     | 93. Bees Wax (Natural and Bleached).     |
| 41. Brown Sugar.                    | 93a. Comb Wax.                           |
| 42. Mustard.                        | 94. Paraffin Wax.                        |
| 43. Cress.                          | 95. Gum Acacia or Gum Arabic.            |
| 44. Swede Turnip Seed.              | 96. Camphor.                             |
| 45. Radish Seed.                    | 97. Shellac.                             |
| 46. Carrot Seed.                    | 98. Common Glue.                         |
| 47. Parsnip.                        | 99. Amber Gelatine.                      |
| 48. Beet.                           | 100. Pale Gelatine.                      |
| 49. Mangel-Wurzel.                  | 101. Resins.                             |
| 50. Parsley.                        | 102. Asphaltum, Bitumen, Pitch.          |
| 51. Celery.                         |  |
| 52. Root or Whole Ginger.           |  |
| 53. Cinnamon.                       |  |



- |   |                                    |
|---|------------------------------------|
| 103. Roll Sulphur.  | 129. Tortoise Shell.               |
| 104. Flowers of Sulphur.                                  | 130. Sponge.                       |
| 105. Sulphate of Iron or Green Vitriol or Green Copperas. | 131. Oyster Shell.                 |
| 106. Soda Crystals.                                       | 132. Mussel Shell.                 |
| 107. Borax or Borate of Soda.                             | 133. Cockle Shell.                 |
| 108. Alum.  | 134. Whelk Shell.                  |
| 109. Fullers' Earth.                                      | 135. Goose Feathers.               |
| 110. Raw Guttapercha.                                     | 136. Goose Quills.                 |
| 111. Washed Guttapercha.                                  | 137. Eider Down.                   |
| 112. Manufactured Guttapercha.                            | 138. Esparto.                      |
| 113. Dental Guttapercha.                                  | 139. Natural Brown Bamboo.         |
| 114. Raw Para Rubber.                                     | 140. Yellow Bamboo.                |
| 115. Washed Rubber.                                       | 141. Malacca Cane.                 |
| 116. Vulcanised Rubber.                                   | 142. Whanghee and Japanese Bamboo. |
| 117. Ebonite.   | 143. Tonquin Bamboo.               |
| 118. Rubber Tubing.                                       | 144. Japanese Bamboo Reeds.        |
| 119. Waterproof Cloth.                                    | 145. Virgin Cork.                  |
| 120. Submarine Cable.                                     | 146. Cut Cork.                     |
| 121. Asbestos.  | 147. Peat.                         |
| 122. Plumbago, Blacklead, or Graphite.                    | 148. Wood Charcoal.                |
| 123. Bone.  | 149. Fir Cone.                     |
| 124. Buffalo Horn.  | 150. Raffia (Raphia) Grass.        |
| 125. Horn of Indian Antelope.                             | 151. Hog's Bristles.               |
| 126. Ivory.   | 152. Cocoa Fibre.                  |
| 127. Nut of Vegetable Ivory.                              | 153. Bahia Piassada.               |
| 128. Nut of Vegetable Ivory (cut).                        | 154. Mexican Fibre.                |
|   | 155. Venetian Whisks.              |

#### GREAT BRITAIN.

Slag from Iron Furnace at Diggle (Roman).

#### CANADA.

Timber from which the Wood Pulp is made.

Wood Pulp, large specimen.

Model of Birch-Bark Canoe.

Model of Birch-bark Tent.

#### MINERALS.

Asbestos, Danville, Quebec.

Apatite, Phosphate of Lime, Buckingham, Quebec.

Mica, Amber, Quebec.

Silver Ore, Star Mine, Fort William, Lake Superior, Ontario.

Copper Nickel, Sudbury, Ontario.

Iron Ore, McKellar Bros., Atic Okan River, Ontario.

Iron Pyrites, Thunderbay, Ontario.

Specular Iron Ore, Clarendon, Frontenac County (Platt and Albion), Ontario.

Copper, Medway Boundary Creek, B.C.

Iron Sulphides, carrying gold and silver (iron, gold, silver), Fontenay Mine, McKininay Boundary Creek, B.C.

Auriferous Quartz, Fraser River, B.C.

Galena (silver lead), West Kootenay, B.C.

#### CANADA, MANITOBA.

Sweet Corn, St. Andrews.

Six-rowed Barley, St. Clements.

Two-rowed Barley, Lorne.

White Oats, Wallace.

Field Peas, St. Francis Xavier.

Stratagem Garden Peas, Westbourne.

Flax Seed, Stanley.

Flax Seed, Winchester.

Flax Seed, Rhineland.

Field Peas, Ellice.

Red Fife Wheat, Argyle.

Alalfe Clover, Rhineland.

Red Fife Wheat, Sifton.

Red Fife Wheat, St. Andrews.

Red Fife Wheat, Woodworth.	Tares and Vetches, Louise.
Garden Peas, Blue Peter, St. Boniface.	White Oats, Rookwood.
Red Fife Wheat, Pipestone.	White Oats, Ellice.
Six-rowed Barley, Odanah.	Red Fife Wheat, St. Boniface.
Alsike Clover, Rookwood.	Red Fife Wheat, Stanley.
Six-rowed Barley, Winnipeg.	Red Fife Wheat, Silver Creek.
	Red Fife Wheat, Tacke.

#### CANADA, ONTARIO.

Field Peas, No. 1, Division East of Port Arthur.  
 Field, Peas, No. 2, Division East of Port Arthur.  
 Rye Grass, Division East of Port Arthur.  
 Barley, No. 1, Division East of Port Arthur.  
 White Winter Wheat, Division East of Port Arthur.  
 White Oats, No. 1, Division East of Port Arthur.  
 White Oats, No. 2, Division East of Port Arthur.  
 Goose Wheat.

#### WEST INDIES.

Machete for Sugar Cane Cutting.

#### BRITISH HONDURAS.

Down of the Salt Water Palmetto.  
 Annatto Pods.

#### ANTIGUA.

Silicified Wood.

#### ST. KITTS.

Cassava Starch.

#### DOMINICA.

Cinnamon. Plantation Coffee.

#### UPPER AMAZON.

Two Fine Bows and Eight Poisoned Arrows.

#### WEST AFRICA.

Horns of a "Mendi" Cow (West Coast of Africa).

#### CAMEROONS.

Man's Pouch. Chief's Head-dress with bells, in hat box.  
 Bow and Poisoned Arrows.  
 Chief's Tooth Scraper.

#### NATAL.

Angora Hair.	Buckwheat.
Linseed.	Sunflower Seeds.
Millet.	

#### EAST AFRICAN WOODS.

##### MAKONDE PLATEAUX.

Ebony.  
 Various Specimens of Native Woods (about 19).  
 Large Bean.  
 Strophanthus Seeds (Rovuna).

#### ZANZIBAR.

Large Conch Shell.

# MASAI.

Woman's Bead Belt.  
 Woman's Bead Ornament.  
 Woman's Bead Ornament (flat).  
 Woman's Bead Earrings (one pair).  
 Ivory Pin.  
 Chief's Snuff Box and Chain (snuff box ivory, chain native iron).  
 Woman's Forehead (Beads and Iron) Ornament.  
 Masai Chief's Ring and Seal, carved iron.  
 Woman's Machete.  
 Man's Stool for sitting on.  
 Eight Spears, native iron.  
 Two War Shields.  
 One Peace Shield, Rhinoceros Hide.  
 Two Iron Swords.  
 War Drum.  
 Three Bows and Two Cases of Poisoned Arrows.

# MAURITIUS.

Sugar Cane. Aloe Fibre.

# GRASS CLOTHS AND MATS.

Madagascar Mat or Curtain, single. Madagascar Mats, four oblong.  
 Madagascar Mat or Curtain, double. Madagascar Mats, three square.

# CEYLON.

Coca Nut Oil.	Tea, Broken Pekoe, low grown.
Coca Nut Threads, Dessicated.	Tea, Broken Pekoe, high grown.
Coca Nut, Dessicated, medium.	Bristle Fibre.
Coca Nut, Dessicated, strips.	Mattra Fibre.
Coca Nut, Dessicated, coarse.	Coir Rope.
Coca Nut, Dessicated, chips.	Coir Yarn.
Coca Nut, Dessicated, fine.	Coca Nut Oil Cake, Poonac.
Copra.	Lemon Grass Oil.
Tea, Pekoe Souchong, low grown.	Cinnamon Leaf Oil.
Tea, Pekoe Souchong, high grown.	Citronella Oil.
Tea, Pekoe, high grown.	Cinnamon Oil.
Tea, Pekoe, low grown.	

# JAPAN.

Doll in Box.	Pith Box, with Lid.
Basket, Imitation Chinese.	Tea Pot (Model).
Imitation Blue Nankin China Vase.	Two Statuettes.
Lacquer Box and Two Small Model	Model Bow and Arrows.
Masks in Lacquer Box.	Lacquer Tray.
Saki Cup.	

# BRITISH NORTH BORNEO.

Manilla Hemp.	Kapok, Chinese Coffee Tree from
Cutch.	Sandakan.
Coffee Beans.	Collection of 14 Postage Stamps
	of 1897.

# CHINA.

Pair of Chop Sticks.	Ivory Fan (pierced).
Bowl.	Nankin Ware, Jug and Plate (broken).
Basket (grass).	Samples of Cloth Used (small pieces,
Fan (reversible).	Unsworth).
Sword of Cash.	Three Chinese Paper Fans.
Carved Frame (Shanghai).	One Chinese Umbrella, paper.



# FIJI ISLANDS.

Copra, dried kernels.  
Coffee Beans (*Coffea Arabica*).  
Kidney Cotton Seeds (*Gossypium Religiosum*).  
Rice, Patna (*Oryza Sativa*).  
Candle Nuts (*Aleurites triloba*).

# AUSTRALIA.

Fine Carved Boomerang. Carpet Snake in Spirits.

# WOODS.

Torbay Karri (C. and E. Millar's).	Tallow Wood (D).
Blue Gum (G).	Spottedown (C).
Hloozwood (1s).	Black Butt (B).
Iron Bark (1s).	

# NEW SOUTH WALES.

Auriferous Calcite, with Metallic Antimony. Perseverance Vein, New Reform Mine, Lucknow, N.S.W.  
Stanniferous Cement. Hall Brothers' Claim, Kangaroo Flat.  
Redruthite and Chalcopyrites. Nyanagu Copper Mine.  
Gold Quartz, showing free gold. Bywong, south end of Lake George, Co. Murray.  
Sheelite, with Stibnite. Hill Grove, near Armidale.  
Lode Tin Ore. Maryland Tin Mines, New England, N.S.W.  
Silver Ore Lode Stuff. Big Plant Mine, near Emmoville.  
Auriferous Quartz, ferruginous. Mount Ephraim Hanging Rock, Nundle.  
Cuprite and Malachite. Girilambone Copper Mine.  
Silver Ore, Galena and Graphite. Umberumberka Silver Mine, Barrier Range.  
Silver Ore. Bulldog Mine, Mitchell.  
Silver Ore. Silver King Mine, Booroak.  
Silver Ore. Umberumberka Silver Mine, Barrier Range.  
Auriferous Friable Quartz, yielding 5oz. gold per ton. Temora, Cootamundra Railway Company, Bland.  
Silver Ore, Carbonate of Iron. Umberumberka Silver Mine, Barrier Range.  
Crude Antimony, first quality.  
Calamine. Bridbo.  
Erubescite (Bornite). Burley Jacket Mine, Woodstock.  
Kaolin (Pipe Clay). Uralla.  
Lode Tin Ore. New England, N.S.W.  
Brown Hæmatite Bog Ore. Mittagong.  
Iron Ore, titaniferous. Two Mile Creek, Raymond Terrace, Co. Gloucester.  
Oxide of Iron, with Chloride and Oxide of Silver. Silvester Barrier Range.  
Lode Tin Ore. Barkhut Lode, Mole Tableland.  
Stibnite, No. 1.  
Alum Crystals, manufactured Alum.  
Iron Chomite. Nundle.  
Silicate and Oxide of Manganese. Bendemeer, Co. Inglis.  
Hemp from Manila Seed.  
Pulu or Vegetable Wool (*Macrozanica Spiralis*).  
Coachwood Bark (*Ceratopetalum Apetalum*).  
Chevalier Barley.  
Sugar Beet Seed.  
Hemp from Borneo Seed.  
Sorghum Saccharatum.  
Californian Brewing Barley.  
Grass Tree Gum (*Xanthorrhæa Arborea*).  
Giant Rye.  
Sisal Hemp from Bahama Seed.  
Australian Dun Peas.

New Zealand Hemp.  
 New Zealand Marrowfat Peas.  
 Grass Tree Gum (*Xanthorrhoea Hostilis*).  
 Silver Wattle Bark (*Acacia Decurrens*).  
 New Zealand Oats.  
 Canary Seed.  
 Wheat, "Pride of the Market."

#### WOODS, NEW SOUTH WALES.

Stringy Bark (*Eucalyptus Eugenioides*).  
 Black Bean (*Castanospermum Australe*).  
 Grey Iron Bark (*Eucalyptus Crebra*).  
 Brush Box (*Tristania Conferta*).  
 Red Iron Bark (*Eucalyptus Sideroxyylon*).  
 Stringy Bark or Victorian Messmate (*Eucalyptus Obliqua*).  
 Black Wattle Bark (*Acacia Binervata*).  
 Ramie Ribbons.  
 Linseed.  
 Kurrajong Tree Fibre (*Sterculia diversifolia*).  
 Sarsaparilla Leaves.

Kidney Soup (Ramovine, Clarence River).  
 Compressed Corned Beef (Sydney).  
 Bronze Medal Baking Powder.  
 The "Best" Baking Powder.

#### QUEENSLAND.

Native Copper, with Oxides, Malachite, and Calcite. Locality, Cloncurry.  
 Cinnabar. Gympie District, Kabooga.  
 Crystals of White Antimony. Herberton District.  
 Stibnite Antimony Sulphide. Herberton District.  
 Plumbago.  
 Molybdenite in Quartz. Mackay District.  
 Auriferous Ochre, said to be rich in Gold. Gladstone District, Frampton's Mine.  
 Bismuthite, containing Gold.  
 Tinstone. Herberton District.  
 Tinstone, with Quartz. Return Creek, Herberton District.  
 Pyrolusite. Gladstone District.  
 Bulk Hæmatite from Surface. Normanton District.  
 Mother of Pearl Shells.

#### NEW ZEALAND.

Auriferous Mundic in Scholl and Calcite. Rockhampton District, New Zealand. Gulley 2.  
 Grass Tree Gum (*Xanthorrhoea* Sp.).  
 Wheat (variety, Canning Downs).  
 Cape Barley (grown at Crow's Nest).  
 Rice (grown at Cairns).  
 Queensland Arrowroot.  
 Allora Spring Wheat.  
 Wheat (variety, "Budds Early").  
 Ground Wattle Bark (for Tanning).  
 Sugar, Seaforth, C.I.  
 African Wheat (grown at Hendon).  
 Chevalier Barley (grown at Drayton).  
 Cape Oats (grown at Crow's Nest).  
 Divi Divi Pods (*Cassalpinia Coriaria*).  
 Maize (variety, "Early Leaming").  
 Sugar, No. 2 (Colonial Refining Co.).  
 Kaffir Corn.  
 Sea Island Cotton (grown at Ingham).  
 Coffee (grown at State Nursery, Kamarunga).

WESTERN AUSTRALIA.

Galena Sulphide of Lead.  
Long Wool (Lincoln Fleece).  
Native Tea (*Leptospermum Myrtacea*).  
Black Boy Gum (*Xanthorrhoea Sp.*).  
Silk Cocoons.  
Native Peach, Guandong Nuts (*Fusanus Acuminatus*).  
Merino Wool.  
Paper Bark (*Melaleuca leucadendron*).  
Eucalyptus Gum.

VICTORIA.

Maize.	Pea (Bainsdale).
Maize, No. 2.	Amber Malt.
Linseed.	Black Malt.
Peas.	Oats.
Bean.	Oats, No. 2.
Pea, No. 2.	Barley.
Skinless Oat.	Vegetable Seed.
Pea, No. 3.	Vegetable Seed, No. 2.
Wheat.	Vegetable Seed, No. 3.
Luzerne.	Vegetable Seed, No. 4.
Table Salt.	

PITCAIRN ISLANDS.

Hand Bag (Grass).	Coca Nut (Coloured).
-------------------	----------------------

TASMANIA.

National Portland Cement.

---

KOLA AS A TIMBER PORT.

Eccles, September 9th, 1899.

Dear Mr. Sowerbutts,—As this is the first year that timber has been shipped from the port of Kola (in Kola Peninsula), I venture to hand you particulars of an interview with the captain of the “Martha,” the second timber-laden ship to leave Kola. He describes it as a most inhospitable spot; the coast line is bold and rocky, with deep water close to the shore; near the coast the country consists of rock and sand (bleak and barren). The first signs of vegetation are a few hardy shrubs, with the birch struggling along the ground, almost like ivy. Proceeding further inland are forests of birch and pine. The river is navigable for about 30 miles, and here some Russian foresters sent over from Archangel have erected a sawmill, and are now busy exporting their productions from the pine forests chiefly to the English markets. The village, which consists of a few wooden huts, dotted here and there, is almost a mile further up the river. Above the village the river is rocky, and in summer shrinks a good deal, dividing into different channels. The few inhabitants are Russians and Lapps, who live mostly by fishing. The winters are very severe, with a heavy snowfall. This year, in May, there was 10ft. of snow on the ground. As you will conclude, the summer is a short one. The Russian government has recently sent over from Archangel to Kola some timber experts to inspect and report on the forests. Their report is, however, unfavourable, the climate is too cold to allow the trees to attain large dimensions. In all probability it will be necessary to work further south to procure larger trees. In that case, Kola would not be the shipping port. On board the “Martha” was a Scotchman (a retired army captain), who has taken the fishing of the Kola river from the government. He has been living there for the past five years. He and a companion, this year, caught in a fortnight 4,000lbs. of salmon. He says in the autumn the fish run to a good size, between 30 and 40lbs. weight.—Yours very truly,

H. ALBROW



## CORRESPONDENCE.

"OPHIR."

The following interesting letter has just come to hand from Dr. Peters, who is engaged in exploring in Mashonaland :—

Injanga Valley, Mashonaland,  
11th August, 1899.

Dear Sir,—The following facts may be of interest to the members of your Society and a geographical public.

I have been exploring during the last months the north of the Macambi's country south of the Zambesi, east of the Lupata gorge, a district called Injakafura. This district I have evidence is identical with the renowned Sierra da Fura of the Portuguese writers, or the long-sought for "Mount Fura" of the present day.

Permit me to give you a few of my reasons for this statement. On the old maps Mount Fura is placed opposite Lake Rufumbo and east of the Lupata, the same position which Injakafura has now.

Now, I have found out that Inja is a locative prefix, meaning "there is" or "place of." Ka, as prefix of words, means "great"; Si, on the contrary, means "small"; kafura=Great Fura; Sifura (situated north of Lupata gorge)=Small Fura. Fura means hole or mine; kafura means to dig a hole; kafura mangura=to dig iron; nafura mangura=I dig iron; kafura delama=to dig gold; kafura madsu=to dig water. A water hole in a river is Fura, and so Fura is applied as name for river "beds in which they dig for water." Now, Afur or Afer in the Sabæan language means—according to the latest etymology—hole or mine. Afur, in Sabæan and Phenician, is identical with Ophir in the Hebrew language. The vowels in Semitic language are of entirely secondary importance—they were added to the consonants in Hebrew only in the sixth century B.C.

I beg to draw your attention to a quotation in Mr. Bent's excellent book on the "Ruined Cities of Mashonaland" from the Portuguese writer Conto regarding Mount Fura: "It is Ophir, for the Kaffirs call it Fur and the Moors Afur" (p. 295). It appears that the modern word Fura is in meaning and form nothing but the ancient Semitic root Afur or Ophir.

My reasons, that our Injakafura is nothing but the Sierra da Fura, which is identical with ancient Afur, receive a strong support through the following fact: The mine of Fura in the old reports generally is mentioned as being situated west of the Portuguese station of Massapa. Now, I have found Injasapa, or Massapa, east of the mountain range of Fura. The district in which Massapa was situated is called in the Portuguese report Makranga. Now, the people of Macombe call themselves Makranga up to the present day.

More strength than any of these reasons, however, bears the fact that we discovered ruins of undoubtedly ancient Semitic type in the Fura escarpment, "and ancient gold mines with shafts, artificial roads in the rock near it, west of Massapa," as the old reports put it.

I am in too great a hurry to follow up this interesting subject just now, but will do so later on. I hope that what I stated may show that we may consider the Fura question settled, and that this means a great step in the direction of settling the Ophir question also.

Kindly excuse writing and paper with the conditions of my expedition.

I have the honour, Dear Sir,

Yours very truly,

CARL PETERS.

Secretary of the Geographical Society,  
Manchester.

---

EXTRACTS FROM LETTER FROM REV. C. W. PORTER, M.A.,  
GERMAN EAST AFRICA.

Masasi, Lindi,

German East Africa,

July 25, 1899.

My Dear Sir,—I might well fear that I had forfeited your regard and hope of more correspondence, with its refreshing influence, if, as I fear, my diary rightly accuses me of long silence; but your kind forbearance has, I think, been tried before, and Lancashire is true and faithful. By the way, I believe our family, according to an account of them I saw somewhere lately, hail from neighbouring Cumberland and its *statesmen*, a race one may feel it an honour to belong to. Well, we have been keeping pretty steadily this year the even tenour of our way till the last few weeks, when we have reverted to something of the condition of bygone days—war and rumours of war—the Germans making once more an expedition against Machomba, who has caused trouble before, and, after submitting, brought them against him again—his son insulting their flag. The last news is that he and the said son have escaped across the Rovuma to Portuguese territory. Other lesser chiefs have been involved and will probably suffer in consequence.

In the midst of the disturbances (on the Makonda Plateau and its slopes) up comes the Bishop, and had to make a detour by Masasi and *thus* round to Newala, where he was due first, and where he has arrived safely. We also have had an alarm of smallpox, which has carried off a very few a few miles away; but one may hope it is not spreading, as we hear nothing about it now, except of recovering from it. Our harvest (*durrha*) is now about over and is fairly plentiful, having escaped injury from locusts, which have occasionally passed over. So altogether, as to temporal matters, we have much to be thankful for.

You mention Mr. Sowerbutts and his collection of natural products. I often think, when reading of the products of other districts, how much there is growing wild here which might be improved—oil plants, cotton, sugarcane, some kind of aloe, of which the natives make twine. If I have time I

will send a copy of what I have written in some "Masasi Gleanings." I have been trying in a small way to make use of native products, and thus lead the way to save expense of importation—*e.g.*, castor oil (native), used by natives for anointing the body; for burning it answers fairly well, but wants better preparation. Again, gum, which also seems to answer. One rather wants to be an Emin Pasha to do much in that line. The map prepared by the U.M.C.A. office is a *reduced* copy, but has the *unaltered* "scale five miles to the inch," which, of course, is on the bigger scale and should be crossed out. It was, I suppose, photographed.

The following is a rough list :—

*Castor Oil Plant*—*Ricinus Communis* (Palona Christi). Two kinds, seeds of different size; used for anointing person; can be used for burning; very common.

*Ground Nuts*—*Avachi hypogoca*; used for food, and very excellent. Exported to Marseilles, &c. (?) from Mozambique, I think, very largely for adulterating olive oil.

*Semsem*—(*Sesamum*); seed (prepared) used often for relish with porridge; oil good for cooking purposes when fresh.

*Cassava*—(*Manioc*) from which tapioca; *very common* for food, raw and cooked.

*A Small Tree*, from fruit or nuts of which oil is extracted, and used for guns.

*Wild Arrowroot* (?)—*Alua* (Arabic); used at coast (?).

*Ginger* has been made into a kind of preserve.

*Tobacco*.

*Ebony*—(*Dalbergia Melanoxylum*).

*Forest Trees*—Two or three kinds good for building.

*Gum Copal*—(*Valeria Indica*); scarce now, I think.

—Hard wood; used for boxes at coast.

*P'hun*—(*Stercula*); used for canoes.

*Indiarubber* seems scarce now in this neighbourhood.

*Aloe* (?)—(*Agave Americana*); used for making twine.

*Cotton Tree*—(*Sicodendron anfructussum*).

*Orchilla Weed*—Parasite; not common.

*Cotton Plant* (?)—Shrub (*Gossypium Barbadosense* (?); spun rarely by natives.

*Strophanthus Tropicus*—Arrow poison; for heart complaint; *a runner*.

*Do.* *Do.* A variety; small tree (?).

*Forest Tree*—Poison (?); strychnine (?).

*Do.* A variety; fruit edible.

N.B.—In common or occasional use. Durrha (soghum)—rice, maize, beans, treepea, stonenuts, sweet potatoes, yams, gourds, cucumbers, bananas.

*Sugar-cane*—Scarce; red grain; sweet millett.

*Creepers* (?)—Distilling water.

*Trees*—Bark (or (?)); used for medicine.

*Trees and Feeding Gum*—Aromatic (?) leaved.

*Wild Fruits*—Masuko, tamarinds, custard apple, zambaran, etc.

*Oil* from gourd seeds.



# THE JOURNAL

OF THE

## MANCHESTER GEOGRAPHICAL SOCIETY,

---

### A THOUSAND MILES UP THE AMAZON.

By JOSEPH JONES, M.B., CH.B., VICT.

[Addressed to the Society, in the Library, Tuesday, January 9th, 1900, at 7-30 p.m.]

THE main stream of the Amazon is about 4,000 miles long—long enough that is to go in a circle twice round the British Isles, or 600 miles longer than the voyage from Liverpool to New York. For the lowest 250 miles of its course it is 50 miles wide, or if the Island of Marajo in its mouth be regarded as a huge sandbank, which is what it really is, then it is 200 miles wide at its mouth. In other words, one might take the whole of Scotland, push it into the mouth of this river and leave only a small piece projecting. The Amazon has 19 very large tributaries, each of which is really a gigantic river in itself, and through these tributaries it is connected with the Orinoco and the River Plate. The Amazon rises near the west coast of South America, about 60 miles from Lima in Peru, and runs into the Atlantic, traversing nearly the whole width of the widest part of South America in its course. Its depth in places is 20 fathoms or 120 feet. It drains an area nearly the size of all Europe, and is the largest body of fresh water in the world. Its average speed of flow is  $2\frac{1}{2}$  miles per hour. Hence in going up stream a boat hugs the bank to avoid the current, whilst in descending it sails in mid-stream in order to obtain full advantage of the same. As may be guessed, progress is quicker down stream than up. The influence of its flow can be felt 150 miles from the shore. On one occasion the mess-room steward filled the filter direct from the sea when the ship was long out of sight of land, yet the water was only very slightly brackish. The inland navigation of the Amazon and its branches extends over 20,000 miles. The name is supposed to be derived from "Amassona," the Indian word for "boat-

VOL. XV.—Nos. 10-12—OCT. TO DEC., 1899.

destroyer," on account of the tidal wave which rages in the channel to the north of the Island of Marajo, and on account of which ships enter by the south channel.

The river is high at the end of the rainy season and low after the dry season, but even at low river the ship in which I sailed, an ocean-going steamer, experienced no difficulty in sailing as far as Manáos. The difference in level is a matter of 30ft., so that whereas in August you step out of a small boat on to the landing stage, in October, when the river is about at its lowest, you have to walk on planks from the boat to the foot of the landing stage, mount this by a ladder and so ashore.



PORT OF MANÁOS AT LOW RIVER.

Being so near the equator the Amazon is in a warm district. In the coolest part of the ship the temperature used to rise to 84° Fahr. in the afternoon, whilst in the sun 120° Fahr. were registered, and some of the pitch in the seams of the deck was melted. This was when ascending the river. There is a ten-knot breeze from the sea which makes it cooler on returning, but on the inward journey when travelling with the wind and at practically the same speed, one is of course in a dead calm and uncomfortably hot. The river water itself at 6 a.m. was always between 88° Fahr. and 89° Fahr. In my stateroom, which was near the engine-room and the galley, the temperature used to rise to 94° Fahr. in evenings. Under these

circumstances photography is attended with certain difficulties. Often the film would melt whilst in the developer. I had a photograph of myself taken on deck, and in development it came out all right. When reared up to dry, however, it melted and ran, and when shown in the lantern it resembled a storm at sea more than anything else. The second mate said that on a previous voyage it was so hot that the ink evaporated as fast as he poured it out and he had to write his letters with a lead pencil. I do not vouch for the truth of this. The greater part of the Amazon is south of the equator, so that the sun appears to travel from the east round by the north to the west, or what



POST OFFICE IN THE MAIN STREET, PARENTINS (OR VILLA BELLA). ARRIVAL OF THE MAILS.

we should call backward, and it is a curious coincidence that many of the Brazilians deal cards the same back way round.

In the dry season lightning is playing all night, with hardly 10 seconds interval. It is not always in the same place, but constantly appearing in one part after another, very much as a cough is taken up by person after person during a sermon. Not the same person coughing all the time, but the cough always going on somewhere.

It is chiefly due to British enterprise that the Amazon is so extensively navigated at the present day. A few of the ocean



steamers which go a long way up are Brazilian, but most of them are British. The local mails and passengers are chiefly carried by the Amazon Steam Navigation Co.'s boats—a British company with its headquarters in London. Most of their chief engineers are British, and the boats themselves have been built in Britain. Some of them, used on the shallower reaches, have stern paddles and draw about a foot of water, having been originally built for the Nile. The ocean-going steamers run express from Pará to Manáos, except when occasionally they have to carry mails to intermediate ports, such as Parentins, Itacuatiara, or Santa-Rem. These boats carry two river pilots, one of whom is always on watch—a necessary precaution, as there are only two lighthouses on their course.

Besides steamers the Amazon is navigated by battalongs, wooden craft, about 12 yards in length, covered with an awning of palm branches, which come from Peru and elsewhere with native produce, are manned by Indians who live aboard, and which take two months to get back home from Manáos against the stream. Smaller boats are driven by square sails of blue and white cotton, which bear traces of Manchester origin, and there are also native canoes propelled by paddles.

The Indians fish in an interesting manner by means of bow and arrow, with a line attached to the arrow. If they can get a couple of arrows firmly shot in they can usually manage to haul in a river turtle or other large fish. There is a large fish with red flesh which serves the people in some parts instead of beef (cattle being dear). Thus they don't fulfil the old definition of an angler as "a worm at one end and a fool at the other" (Verdant Green). River turtle when caught are laid on their backs, in which position they are helpless, and one on board the ship laid 86 eggs at one break whilst in this position. The eggs are spherical, covered with a flexible limy shell, and resemble in appearance a small tennis ball. They are a treat out there, where eggs are very scarce. The flesh of this kind of turtle is rather tough and not unlike pork.

A great variety of animal life is to be found, including mosquitoes, cockroaches, moths, butterflies, alligators, snakes, tarantulas, centipedes, and grasshoppers. On one occasion, when I was having a game of billiards with the pilot in a hotel ashore, I saw several large bats fly in and out of the open windows, and rats and cockroaches of large size were very numerous. The most wonderful feature of the whole region, however, is the ant. King Solomon's advice to "go to the ant, thou sluggard, consider her ways and be wise," was startlingly good advice. Many of the stories one reads about ants sound very like travellers' tales, but I can assure you that after what I have seen, I could believe almost anything of them. An ant would fight with anything, and one I saw stood up and prepared

to do battle with a boot-sole. On looking down, a lot of leaves could be seen moving about on the ground, apparently of their own accord. When one was overturned an ant  $\frac{3}{4}$  inch long and apparently double-headed was found holding fast to it underneath. The ant wriggled about until it got back to its feet, when it marched on. At first one thought they were using the leaves as a shade from the sun, or that they were going to eat them, but this is not so. The ants lay all the leaves together and form a hotbed of them on which a fungus grows. This fungus the ants eat; that is to say, they actually prepare their own mushroom beds. At Manáos there is a pretty good sandy road running for some distance into the forest, and across this, at intervals, could be seen a ridge of sand about the thickness of a clothes line, extending from the root of one tree to the root of another on the opposite side of the road, a distance of 12ft. usually. Close inspection showed this to be in reality a tunnel built of sand by the ants, which were busy passing to and fro under it. These were a much smaller and redder variety. Its purpose appears to be to protect them from the sight of their enemies—birds—when crossing the road, since a red ant on a khaki-coloured road would be very conspicuous. How they build it and make the grains of sand stick together is a wonder. It is quite possible that there may be an order of Freemasons among them, which holds the secret. Near these tunnels are numerous little funnel-shaped depressions in the sand about 1½ in. deep and about 2 in. wide at the top. They may possibly be the entrances to the sand tunnels, but this is doubtful, since if any small insect falls in, it cannot get out. Every struggle it makes pulls down sand on top of it—the sides being so steep, until at last it becomes exhausted. Perhaps it is some kind of trap prepared for the ant's enemies. All these contrivances must mean a lot of work for the ants, but they seem to like it. It is also said that these ants keep cow ants, which they milk, and that they have slaves, but of these points I have no experience.

The savage people, who live some little distance from the river, are of about our average height and build, walnut-coloured, with long straight jet black hair. In war they fight with bamboo-headed spears and poisoned arrows, the latter propelled by a powerful bow 7ft. long. The arrow-heads, of bone, are dipped in snake venom and inflict a mortal wound. The venom is said to be procured by boiling snakes' heads to extract it from the glands and evaporating the solution to almost dryness. Right inland the tribes often have battles, and the victors kill the women and children of the vanquished. They have a horrible habit of cutting off the heads of girls, skinning them, and curing the skin in such a way that it shrinks, but retains its colour and texture, when they stuff it, producing a head the size of one's

fist, but perfect in shape. They sell them at from £12 to £30 to Europeans, who ought to know better than to buy them.

The civilised people speak the Portuguese language and are of European habits. They are more polite than the British, though this is noticeable by their habits being different from ours rather than by being better. For instance, I have seen a first-class passenger expectorate on the saloon floor when at dinner and never blush, but he would think himself dreadfully impolite if he wore his hat in a restaurant. One is impelled to Max O'Rell's conclusion that "one nation is not better or worse than another. One nation is different from another, that is all."



POST OFFICE AND PEKIN GARDENS, PARÁ.

The money is mostly paper, and there is no paper legal tender less than the milreis (2s. 3d. nominally, actually about 7d.). In Pará small change is given in tram tickets.

The vegetable kingdom numbers 17,000 species and is a veritable fairyland. Orchids, which with us are so highly prized, are much cheaper there. Very many varieties grow quite wild and are little esteemed. I knew one man who had an orange tree in his garden and considered it a nuisance. It crowded out some valuable exotic orchids. He would willingly have let any one take it away but no one would have it. The whole country resembles a gigantic greenhouse, and it is not



without a touch of annoyance that a Briton sees beautiful palms and other trees wasted on people who do not appreciate them when they would be so welcome at home. The hanging roots or tendrils, which grow downward from the branches until they take root in the ground, are quite strange to us, and they offer great resistance to path-making. The most important tree is the india rubber, *Herveia Brasilensis*, which is a large tree, and entirely different from the *Ficus elasticus*, which is commonly called "india rubber" here and grown in rooms. The raw rubber is obtained by incising the bark and collecting the "milk" in a can. A paddle is dipped into this and the milk adhering to it smoked over some



FIFTEENTH OF NOVEMBER SQUARE, MANAÓS.

burning nuts. This is done with successive dippings until a piece the size of a ham is on the paddle, when a slit is made in the side and the paddle withdrawn. It is quite possible that the wily native may insert a pebble, when he has withdrawn the paddle, since rubber is sold by weight. The best quality is that obtained from the island of Marajo and known as Island Rubber. This is said to be because a species of nut grows there the smoke of which cures the rubber better than any other kind of smoke. It is said that every kind of rubber requires some admixture of the Pará variety to make it useful in commerce.

Many of the rubber cutters live in shanties on the river's edge and keep a canoe moored at the door. More inland the poorer classes live in mud huts built on a framework of light wood. Some of these when whitewashed make very presentable houses, as seen in the view of the main street of Parentins, where the post office and neighbouring buildings are all of this sort. The cathedrals are generally handsome buildings, and the post office at Pará is a pretty structure.

The shops are open fronted and usually have no windows, so that at a short distance one cannot tell of what kind they are unless the goods are displayed outside.

The streets are peculiarly named, for instance "Fifteenth of November Square" (date of foundation of the Republic), "Dr. Guimarez Lane," and so on.

The cities bear very evident traces of newness. You may see a public square enclosing a tract of virgin soil and except that the palms are planted in straight rows all the vegetation is natural. There are handsome walnut counters in white-washed stores and burglar-proof safes inside offices which you could demolish with your foot.

Outside the cities the general appearance of the country gives one an idea of what Britain must have been like at the time of the Roman invasion, and shows how civilisation spreads along the course of the rivers.

## PARIS EXHIBITION, 1900.

THERE will be held during the time of the exhibition a very large number of conferences upon all manner of conceivable questions. Amongst this vast clashing of oratory and papers there will be held four congresses of especial interest to geographers. A note is given to remind the members, the particulars in reference to them have already been at several meetings brought to their notice.

7th International Congress: Navigation. To meet in Paris July 28th to August 3rd. The sections are Interior Navigation I. and II., Maritime Navigation III. and IV. The subscription is 25 francs.

International Colonial Congress meets in Paris July 30th to August 5th, at Geographical Society of Paris, 184, Boulevard St. Germain. The subscription is 10 francs. This congress is one of great importance and our members will gain a large amount of information by joining in the meetings.

Economic and Commercial Geography. To be held August 27th to 31st. Subscription 10 francs.

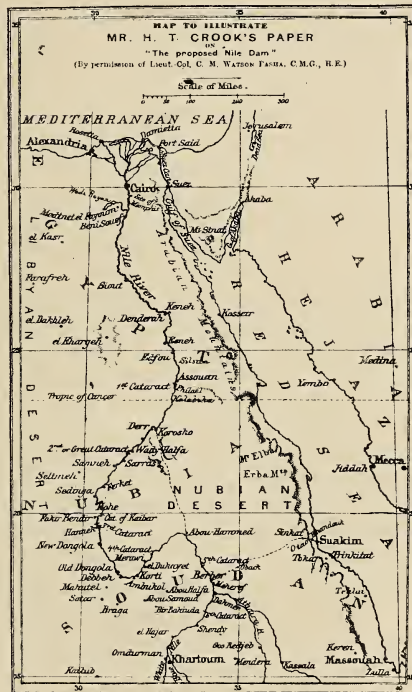
Sociological Congress (The Condition of Natives in Colonies of European and American Powers) to be held at the Paris Geographical Society, 184, Boulevard St. Germain. From August 6th to the 11th. Subscriptions 10 francs.

## BARRAGE OF THE NILE.

By Alderman ISAAC BOWES.

[Addressed to the Society in the Library, Tuesday, November 21st, 1899,  
at 7-30 p.m.]

READERS of history will be aware that the greater portion of our histories, both ancient and modern, are taken up with records of the deeds of warriors, generals, and military heroes, the battles they fought, the conquests they made, and the countries they overran; and



we are told by some that the valiant, and sometimes villainous, deeds that we read of were the necessary precursors of the so-called civilisation we now enjoy. Thinking men, however, are nowadays considering whether civilisation cannot be better promoted by less barbarous methods than those hitherto resorted to, and instead of wars, which resulted in fearful sufferings and feelings of hatred and revenge amongst the nations of the earth, we find that the chief endeavours of our wisest and ablest men have of late years been devoted to overcoming the *natural barriers* that separate man from man and promoting that intercourse which is so beneficial to all the best interests of mankind.



Perhaps no greater progress in the development of applied science and geographical discovery in this direction was ever made in the history of the world than has been made during the present century. Take, for instance, the discoveries of Livingstone, Speke, Stanley, and other African explorers, and the wonderful achievements of our great engineers, such as Brindley, Watt, Stephenson, De Lesseps, and others. The successful completion of the Suez Canal, and the persistent efforts made to cut through the Panama Isthmus, the completion of the Canadian Pacific Railway, and last, but not least, our own Ship Canal; in fact, we have been been making history at a rapid rate. The century teems with great undertakings; others are in progress—the great Trans-Siberian Railway and Cecil Rhodes' grand idea of the Cape to Cairo Railway are projects destined for the amelioration of mankind, the progress of civilisation, and the increase of the natural products of the earth. We are thus providing material of a useful and enduring character for future historians, and this kind of history will, no doubt, have a stimulating effect on our posterity.

Amongst other great projects of a similar nature to those I have named, I propose to call your attention for a short time to the works now in progress in one part of the "Dark Continent" in which we are deeply interested. I allude to the so-called barrage of the Nile. Those of you who take notice of the alluring prospectuses put before the public by company promoters and financiers may have seen in the papers on September 30th, 1899, the following announcement, viz.:—

"Four per cent Egyptian Government Irrigation Trust certificates, secured by deposit of Government pay warrants (mandats de paiement), which are a direct and unconditional obligation of the Egyptian Government and a charge on the Irrigation Works at Assouan and Assiut on the Nile.

"Issue of 6,400 certificates of £100 to bearer, £640,000, further part of a total issue of like certificates for £2,714,700 all ranking *pari passu*, bearing interest at 4 per cent and redeemable by means of an accumulative sinking fund within 30 years commencing on July 1st, 1903. The amount of certificates already issued is £430,000.

"Trustees for the certificate holders:—

"THE RIGHT HON. LORD HILLINGDON.

"SIR ERNEST CASSEL, K.C.M.G.

"HUGH COLIN SMITH, Esq."

The Egyptian Government in 1898 entered into a contract with Messrs. John Aird and Company for carrying out certain irrigation works, consisting mainly of two large dams (barrages) across the River Nile, one situated at Assouan about 590 miles, and the other at Assiut about 250 miles above Cairo.

This work is now in progress, and I propose to give you a brief description of it. The Irrigation Investment Corporation, Limited, have entered into an arrangement with Messrs. J. Aird and Company to finance these certificates; hence the above announcement.

Since the death of Gordon and the Soudan Campaign a flood of light has been thrown on the Nile and this part of Africa; but a few words on this wonderful river may not be out of place here, for there

is no river in the world which is and has been throughout all history so full of interest to the trader, the agriculturalist, and the engineer. It has been said geographically that "Egypt is the desert and the Nile," but after the Suez Canal and the irrigation works of late years this expression must be taken with limitations. The Suez Canal, the railways, the irrigation works, etc., are now large factors in what may be called Modern Egypt. Sir Alfred Milner, in his work on "England in Egypt," says:—

"The ordinary visitor to Egypt knows nothing of the efforts to fertilise the land that have been made in late years. He goes up the Nile, but, as far as the stream itself is concerned, he is almost invariably disappointed.

"Passing over the bridge at Cairo, he looks down upon the most remarkable river in the world—a river with which no other can compare in the strangeness of its character, the richness of its gifts, the immense rôle it has played in human history. But it makes no more impression on him than the Thames at London Bridge. The breadth of the stream is not remarkable—about a quarter of a mile—the volume of water is not great, the colour is dull, the pace of the current is, if anything, slow. Yet the Nile, as the tourist sees it, from December to March, is full and strong and stately compared to what it afterwards becomes.

"To understand, even in outline, the agriculture of Egypt, two great facts must be borne in mind. The first is that the country is watered, not by rain, but *by the river*.

"In Upper Egypt rain practically never falls. Even in Lower Egypt it is an inappreciable quantity. The second great fact is, that the river is not only the irrigator, but the *fertiliser* of the soil. The fine reddish-brown mud which the Blue Nile washes down from the volcanic plateaux of Abyssinia, mixed with organic matter from the swamp regions of the White Nile, does more than any manure can do for the annual renovation of the land."

It is now satisfactorily demonstrated that this mighty river, or its most important branch called the White Nile, takes its rise in Lake Victoria Nyanza, 3,370 miles from the Mediterranean Sea. This lake is 230 miles long and 220 wide (about 50,000 square miles), and is about 4,000 feet above sea level. Speke and Grant, in 1860 to 1863, were the first to explore the lake, and in 1863 Speke gave the world the result of his discoveries in a "Journal of the Discovery of the Source of the Nile." After leaving this lake the Nile receives several tributaries and makes its way through Lake Albert Nyanza (discovered by Sir S. Baker in 1864) into a level and fertile region, which it traverses in long shallow flats and by occasional rapids until it reaches Gondokoro; thence past Fashoda, from which place to Khartoum, where it is joined by the Blue Nile; thence through the Nubian Desert, passing Cairo, and emptying itself by several mouths into the Mediterranean Sea through what is called the "Delta of the Nile," a wide, low plain, which, from its triangular form and from its resemblance to one of their letters, received from the Greeks the name of the Delta. Here the river divides into two branches, called the Rosetta and Damietta branches.

The greatest breadth of the Delta from east to west is about 80 miles and its length about 90 miles. From the point where the river divides into two the interior is covered with fields, orchards, and

plantations, and in the rise of the Nile, beginning in January and increasing to September, overflowing all the lowlands, the Delta then looks like an immense marsh, with islands, villages, towns, and trees just above the water. The inundation having remained stationary for a few days begins to subside, and about the end of November most of the fields are left dry and covered with a fresh layer of rich brown Nile mud. The lands are then put under culture, and from thence to the next inundation the Delta goes through the alternatives of a delightful spring and a fiercely hot summer, and the harvest commences in March; and this depends to a great extent on the amount of water available for irrigation.

## PROPOSED DIVERSION OF THE WHITE NILE.

### REMOVAL OF THE SUDD.

The Cairo correspondent of the *Daily News* sends a summary of an interesting report which has been drawn up by Mr. W. Willcocks on the value of the White Nile to Egypt and the injurious effects of the sudd. The extraordinary behaviour of the low flood of 1899 is possibly due to the existence of this in an especially aggravated form. Mr. Willcocks traces the history of the sudd, and shows that the White Nile is gradually getting blocked up by it. The sudd is formed of floating weeds brought down from Uganda and Lake Albert. Mr. Willcocks says: "As matters now stand, we find that the Bahr el Gebel, which in 1840 carried practically the whole of the supply of the Victoria Nile, and was a broad open stream, some 400 metres wide and five metres deep, is to-day well-nigh obliterated for 250 kilometres. The waters of the Victoria Nile are in great part carried by the Bahr Ziraf, which has thus taken the place of the Bahr el Gebel. The great decrease in the discharge of the Bahr el Gebel has caused Lake No, which was a very considerable expanse of water in 1840, to dwindle into an insignificant marsh. The broad, shallow arm of the river which connected Lake No with the Saubat river and went by the name of the White Nile, has been in great part obliterated by sudd, and the Ghazal river is doubtless finding a more commodious outlet for its waters by means of the Bahr Lollé." As there are only 30 kilometres of sudd in the Bahr Ziraf, it would be a comparatively easy task for the Egyptian Government to remove the sudd from the head waters of this arm of the river, and open a wide channel into the Victoria Nile, and then close the Bahr el Gebel at the head of the dam. On the completion of this work, the cost of which Mr. Willcocks estimates at £20,000, the Victorian Nile supply would be brought straight down to Egypt, and not only might the summer supply of 1900 be increased, but the rise of the river in June, 1900, might begin at an earlier date. Once the sudd were removed, it would be easy to devote annually a fixed sum of money to the raising of the banks in the low parts. On this work Mr. Willcocks proposes an expenditure of £600,000, spread over ten years. If the project were estimated to cost £6,000,000 instead of £600,000, he thinks it would be well worth the while of the Egyptian Government to execute it. The Soudan without the head waters of the Victoria Nile, he says, is worth nothing; as the high-way of these waters it is a possession of great value.

You will note that from its rise to the Mediterranean Sea the Nile has a fall of nearly 4,000 feet, passing over seven cataracts, some of them six to seven miles long. These cataracts serve a useful purpose by backing up the water, and in the flood season allowing it to be diverted into canals, which are constructed and have been used from time immemorial to convey the water into the interior for irrigation purposes. I may mention the primitive methods used to raise water from these canals in the time of Moses. The pictures on tombs, etc.,



show the most common—a large wheel working on an axle, the outer rim covered with earthen jars made of baked Nile mud; the lower part dips into a trench of water. To this is attached a toothed wheel, lying flat on the ground and turned by an ass, a mule, a camel, or a buffalo fastened to a pole and walking in a circle. The jars dip into the water mouth first and come up full, and in turning over the top empty their contents into a trough. Another contrivance is the Archimedeian screw. It consists of a flexible tube bent spirally round a cylinder. The ends work on pivots, one in the water, the other in a piece of wood fixed above. It slopes down into the water, and a man at the top turns a handle; the water finds its way up the spiral tube and empties itself into a trough, and so flows into a reservoir or into trenches cut in the earth.

From the richness and quantity of the deposit from the Nile water it is well adapted for this purpose; in fact, when the water is properly distributed on the land from two to three crops per annum may be obtained, thus rendering Egypt where this irrigation is carried out the most fertile country in the world. This was well understood in the days of the Pharaohs, and that the “mastery of the Nile” meant the welfare of Egypt; in fact, Herodotus described Egypt as “the gift of the Nile,” and 450 years B.C. explored it as far as the Island of Elephantine. No wonder, then, that for ages past various schemes of irrigation have been proposed and many carried out; but a poor country like Egypt has not been until lately in a financial position for carrying out adequate works for this purpose. Wars, insurrections, etc., have also prevented the different Governments that have existed from giving that attention to this important subject which it demanded. In some parts of Egypt three crops per annum are raised, chiefly cotton, sugar cane, rice, wheat, beans, barley, etc., by storage of the waters in canals, reservoirs, and by such means as they already possess; when the river is in flood it is retained or held back until the fall or subsidence of the floods. It has, therefore, always been an important consideration that as much of the Nile water as possible should be impounded in the flood season for utilisation in the dry season; for Egypt is a country in which very little rain falls.

In modern times, Napoleon when in Egypt proposed to have dams constructed, but his military operations in that country and elsewhere prevented any of his plans for this purpose being carried out. Mehemet Ali, one of the most remarkable men of the time in which he lived, when Viceroy of Egypt, undertook in 1833 the construction of the Rosetta and Damietta Dams at the apex of the Delta of the Nile, 14 miles below Cairo. The plan adopted was the building of two bridges over the two branches of the Nile, one with sixty-one arches, the other seventy-one arches, and provided with iron gates, sluices, and locks at each end. The work was carried out by Mongel Bey, a celebrated French engineer. These took nearly twenty years to build, and cost nearly two millions, and were intended to back up 16 metres of water in depth; but, through bad workmanship, bad foundations, and faulty design, the result was anything but a success. The dams did not hold up much more than half the water that was expected, and the constant repairs imposed such a heavy tax on the revenue raised by the Land Tax, that in 1883 the

dams were declared valueless. They were put into the hands of Sir Colin Scott Moncrieff and his Anglo-Indian engineers for thorough overhauling and repairs; this was completed in 1890, and the dams when re-constructed held up more than four metres of water above ordinary river level.

Through the improvements in the Rosetta and Damietta Dams the production of the Delta increased to a remarkable extent, as the following figures for five years, from 1888 to 1893, show. This increase is still going on.

	COTTON PRODUCED.	SUGAR PRODUCED.
In 1888.....	2,410,714 cwts.	714,616 cwts.
In 1893.....	4,642,857 ,,	1,278,964 ,,

An enormous increase has also taken place in the production of wheat, vegetables, fruit, etc. On this point Sir A. Milner says: "Such are the main features of the work which has revolutionised—I can say nothing less—the agricultural condition of the Delta and saved its inhabitants from the widespread bankruptcy and possible famine which were staring them in the face ten years ago."

Since Great Britain became the paramount power in the administration of the finances of Egypt many schemes have been proposed for impounding more of the waters of the Nile. One which attracted a considerable amount of attention a few years ago, was to utilise the so-called Raiyan Lake (87 miles above Cairo). Mr. Cope Whitehouse, a noted engineer and traveller, was led by the study of ancient maps and investigation of the site to the conclusion that the Raiyan depression in the Fayoum, some distance from the Nile, and described in many recent geographical works, was the ancient "Lake of Moeris, the Sea of Seas." This, Mr. Whitehouse contended, was originally connected with the Nile, and for five years he persisted in urging upon the Government the feasibility of creating a vast reservoir for controlling the Nile flood. The depression is, at the deepest, 150 ft. below sea level.

Lord Cromer said it was much to Mr. Whitehouse's credit that he had demonstrated this fact, and said: "There is hope that it may be utilised for the benefit of Egypt," and in 1893 he wrote: "What is wanted, is that Egypt shall have the best possible reservoir, whether it be the Wadi Rayan or in the Nile Valley itself, formed by means of artificial dams." On account of financial difficulties nothing could practically be done, the revenues being under the control of the "Caisse de la Dette." This Commission or Committee is composed of representatives of England, France, Austria, Italy, Germany, and Russia; this mixed administration, the chief duty of which is to see to the payment of interest on the bonds for the Egyptian debt, which had mounted up during the extravagant career of Ismail Pasha from 3 millions in 1863 to 89 millions in 1876. Nothing of any great moment can be undertaken without the consent of this Caisse.

At the instigation of Sir Colin Scott Moncrieff, of the Egyptian Public Works Department, in 1889, Mr. Wilcocks, an Anglo-Indian engineer, was instructed by this Department to survey and report on the best sites in the Nile Valley for the erection of a dam or dams, and after four years' exploration and investigation, he, in 1894,

reported that a dam at Assouan at the head of the first cataract was the best site north of Wady Halfa. From this point to Cairo, it may here be named, that the Nile is navigable all the year round for vessels drawing 5 to 8 feet.

This site, admirable in many respects, had one serious drawback. The backing up of the water for a portion of the year submerged the ruins of the celebrated Temple of Philæ, situated on the island of that name in the Nile. This at once roused the opposition of antiquarian and historical societies in England and the Continent. The Works Department of the Egyptian Government and the engineers were denounced, and such a storm of indignation arose that, on further consideration, Mr. Wilcocks modified his scheme by reducing the height of the Dam at Assouan so that the water on the upper side of the dam will be 46 feet above the river bed instead of 76 feet as at first proposed. This will save the ruins of Philæ from being submerged, to the great relief of sentimental scientists and wandering tourists.

A further portion of Mr. Wilcocks' scheme is the erection of another dam at Assiut, 250 miles above Cairo, and thus to provide for the irrigation of Middle Egypt and the Fayoum during the summer. This dam is much shorter and not so high as the Assouan Dam, and about 10,000 men are employed on this part of the work. Both dams are provided with navigation locks, sluices, etc.; they are to be completed in five years from July 1st, 1898. Sir Benjamin Baker is chief engineer for the whole scheme. The work was publicly inaugurated on February 12th last, on which day the foundation stone was laid by H.R.H. the Duke of Connaught. During the last few months, the contractors, Messrs. Aird and Company, have made much progress with the work, and the first cataract is now the scene of bustling activity, no less than five to six hundred European officials and workmen being employed; while ten thousand natives are at work quarrying and preparing the stone, which is obtained near the spot. The Nile, at the first cataract, is about a mile wide, and the channel is broken at low water by a labyrinth of rocky islets and ridges. It is on this foundation that the great dam will be built. It will be over a mile long, 80 feet wide at the base, and the top will be 90 feet above low-water mark. It will be pierced with 180 sluices for the regulation of the flood waters, and will raise the level of the river for 140 miles above the first cataract.

The contractors agree to accept payment by annual instalments of £160,000, and, extending over 30 years, £4,800,000.

It is reported that the health of the staff and workmen is very satisfactory, none being under medical treatment. There were cases of sunstroke when the thermometer stood at 116 or over; but with ordinary care there is not much danger, for during the hottest part of the day all can be in the shade. Work commences at 5 a.m., stops for breakfast 7-30 to 8; another stop from 11-30 to 3-30, and then the work goes on until 7 o'clock, and on some portions of the work night work is carried on.

The vast importance of irrigation works to Egypt may be gathered from the following facts. There are in Upper and Lower Egypt over five million acres suitable for irrigation. Supposing works sufficient for this purpose were carried out, the Under Secretary for the Public Works Department stated that the gain to the State or the annual yield



would be increased from 32 to 38 millions. The prospect of such a result would justify a very large expenditure on works to control the river, and at the same time benefit the people; and what has already been done in this direction by England, in spite of much opposition and obstruction, ought to be gratifying to Englishmen and to all interested in the welfare of Egypt. As Sir Alfred Milner said in 1894: "The great factors in developing the productive powers of the country are the prevention of financial waste and the carrying out of more irrigation works." This is now the most interesting problem that confronts England and the financiers and engineers of Egypt. It was stated by Dr. A. de Claparide (Geneva) at the late Berlin Geographical Conference that when he was in Cairo this summer Lord Cromer gave him to understand that the barrages of Assiut and Assouan are only a first stage in utilising the waters of the Nile for agricultural purposes. A day would come when from Assouan to Khartoum other barrages would be constructed, thereby making fit for cultivation thousands of acres of desert land which possess no value now.

---

## NEW BOOKS.

---

**PEAKS AND PINES: ANOTHER NORWAY BOOK.** By J. A. LEES, joint author of "Three in Norway." 378 pp., in 20 chapters. Many illustrations (no index). Longmans, Green and Co., London, 1899. Price 6s.

THOSE who have read "Three in Norway" will be pleased to welcome this description of journeys somewhat out of the beaten track of the ordinary coast tourist. It is a lively book and is not without some adventures. We would rather read about the mountain walk or the descent of the foaming cataracts than experience them, and the author will probably not be anxious to repeat some of the experiences.

But the book will give much pleasure to many readers, and members will be glad to know that it may be seen in the library.

The book is handsome and the photographs come out very well indeed.

There are many good pieces we should be glad to quote, but space forbids, and we must refer those who want a new delight to the work itself.

**FIELD TESTING FOR GOLD AND SILVER: A PRACTICAL MANUAL FOR PROSPECTORS AND MINERS.** By WM. HAMILTON MERRITT, F.G.S. Crosby, Lockwood and Son, London, 1900. 136pp. Preface, appendix, and index, and nine illustrations. Bound in leather. Price 5s. nett.

THIS is a little book of value not only to prospectors and miners, but to many others who have to deal with gold and silver.

We can only think that much money would have been saved if prospectors who have made misleading reports had studied and put in practice the teachings of Canadian geologists.

The thirty chapters of this manual, clear, crisp, and definite, and amply illustrated with diagrams, photographs, and tables, cover the whole ground.

The glossary of mining terms is useful, and the analytic tables of minerals will be often referred to.

It is a small book, but it will commend itself to the theorist as well as to the practical man, and will be useful to all those engaged in the search for precious metals or their exploitation, it has also much value to those who are not in the field but who frequently want the kind of information here set forth.

## HUNGARY AND THE CARPATHIANS.

By MR. S. WELLS, F.R.G.S.

[Addressed to the Society in the Library, Tuesday, October 10th, 1899,  
at 7-30 p.m.]

TRAVELLING in Hungary is made very comfortable providing you possess the necessary time and money. A great part of the country is unknown to tourists.

We travelled several days among the most beautiful scenery, and passed the castle where King Richard the First was imprisoned, and in which he was supposed to have been discovered by his favourite minstrel.

Hungary is a remarkable country; perhaps the most remarkable of any in Europe. The population of the country is composed of various nationalities—Roumans, Germans, Magyars, Croats and Serbs, Slovaks, Gipsies, and many others. All these live in their own settlements, have their own characteristics and customs, and speak different dialects.

Passing the frontier the scenery becomes more varied. The national costume of the Magyar peasantry is peculiar; their strange-looking trousers, rather like a mason's apron, take from fifteen to twenty yards of calico. The scenery in parts resembles that of our own country, the only difference being the people and the architecture.

After a very slow journey we reached the edge of the Great Plain, and were left at a little roadside station. It was early morning, and we had been travelling all night. There was no refreshment room, and when we inquired if we could have a conveyance we were told yes, we could have one in an hour. We waited an hour and then inquired again, and were again told we could have one in an hour. After three hours of this sort of thing we managed to get on our way again, and, coming upon a village, we asked if we could have something to eat. After waiting a considerable time we were rewarded with a bread loaf, about two pounds of cheese (looking very like lard), and a liberal supply of pure water, using an old paraffin tin as a dipper; this was our breakfast.

There are thirty-seven thousand square miles of plain, and the farms there are enormous. You find peasants who cultivate from one to two thousand acres of land, and although the land has not been manured for hundreds of years it still produces a fine crop of corn. Some of the buildings are very lonely, and above all others, I think, the shepherds have the most lonely time of it. The national costume of the Hungarian peasant of the plains consists of an immense coat, which serves for both summer and winter; in the summer it keeps off the hot rays of the sun, and in the winter the woolly side is turned inside to keep him warm.

In the mountain districts we visited a cobalt mine which has been worked for 2,000 years, the marks of the chisel in the older parts of

the workings being still plainly visible. The ore they obtain is sent by railway and waterway even to England, for although the people are able to mine it they are not able to extract the beautiful colours which the ore contains.

The costumes of the Hungarian nobles are very magnificent. When the Prince of Wales was over there he had a grand reception, and was much astonished at the splendour of the costumes worn. Looking round, he remarked: "I think I shall spend £10,000 to buy some of these costumes to take home with me." "I do not think," was the reply, "that you will be able to obtain one of these costumes for that amount of money." I shall never forget the scene at the opening of the National Exhibition. The costumes worn, covered with diamonds and precious stones, were magnificent.

The native carriage is a primitive contrivance. We were able to engage one. We naturally felt there was a certain amount of charm in travelling over the country in such a picturesque conveyance—but—there are no springs, and after we had been travelling for three hours we experienced considerable discomfort, and so stopped and purchased three sacks of straw to use as cushions. We travelled over a part of the country which at one time was infested by brigands and along a road where they used to hang them.

In the bowels of the earth there are hidden beauties, enormous caverns and caves with underground rivers extending for miles. The caverns you can explore hour after hour, and so dark are they that the beauties are only to be seen by the means of the magnesium light; they resemble scenes in fairyland.

Here and there on the hills you find a river running some distance, travelling for a mile or two, and then disappearing. I saw one such, and was told by a native that when the Almighty created rivers and streams He gave the word for them to flow; this one was not ready, and therefore it lost itself.

Some of the rivers flow out of the mountain sides, and one we visited on the border of the country springs out of the rock cliff, deep enough to carry boats on the surface.

In passing over the limestone district, where no vegetation exists, we came across circular fields—beautiful green spots. These fields are called *doleens*. Sometimes when one visits one of these spots we were astonished to find no longer a circular field, but an immense hole in the ground, as beneath these fertile spots are enormous caverns, and occasionally a landslip occurs.

In some of these underground caverns we walked for five hours without reaching the end, and a very tiring five hours it was. Nothing that I can tell you will give you any idea of the beauties of these places. One room was four hundred to five hundred feet long and two hundred feet high. Stalactites of enormous size hang from the roof, and rise from the floor, some 50, 60, and 80 feet high, and very beautiful they look lighted up by the magnesium wire. There is also life in these underground caverns. The insects are quite white. You will see flies with wings out of proportion to their bodies, spiders with immense heads, and fishes without eyes. You see, living in total darkness, as they do, they have no necessity for eyes.

A few miles away we found the rock no longer rising vertically from



the ground, but in horizontal layers, and here we came across some remarkable chalk houses underground. Clever people tell us that these were inhabited many thousand years ago; this does not seem possible, but it has been conclusively proved that the scientific men are quite right, for outside these dwelling places have been found all kinds of utensils, copper, iron, and, lastly, various primæval implements of flint and bronze. All the light comes from the front door, from which to the dwelling place below there is a considerable fall, perhaps twenty to thirty feet.

We now leave the caves for the forest district. The picture on the screen will show you one of the very large family—the Rusmaks. These people speak a dialect of their own, and they are Communists pure and simple. They have no high-class ideas, but they have a simple faith that God made everything, therefore the care of everything belongs to one and all alike; so they make a point of helping themselves to their neighbours' goods and gardens, being too idle to help themselves to their own.

The forests are very extensive; there are about 23,000,000 acres of forest land in Hungary. Travelling into the heart of the forest everything is very silent. In one woodman's hut we visited he showed us the skins of two bears he had shot two years before. The finest timber is grown on the tops of the mountains; this is cut down and shot down great slides to the lower level; there wagons can be loaded with it, and it is conveyed to its destination.

We found the people very kind-hearted. One village we passed through was inhabited by the true Magyars, with their quaint architecture, while a few miles further on was a Saxon village. Here the people, the architecture, and the churches were quite different. There are several interesting stories of the origin of the Saxons. You will most of you be familiar with the story of the Pied Piper of Hamelin, who after ridding the town of rats was refused his promised reward, and therefore he lured away the children with his magical piping. The story goes that after taking them by a mountain path, known only to himself, he brought them out in Hungary, and there they settled, and the Saxons are the direct descendants of those same little boys and girls. They are a most interesting people, and many of their customs are very curious. When a young man wants to propose to a young woman, for instance, a great deal of formality has to be gone through, and a deputation has to wait upon the parents. When, however, they *are* married divorce is a very easy matter. Two things only are necessary; first, you must be a Unitarian, and, secondly, a householder. After these two necessities are accomplished the rest is soon done, and in a few days the marriage knot is untied and you are free to choose a new partner.

There are numerous sects to be found here, and the people believe in allowing one another to worship as they will. In one village that we visited the Roman Catholics had a church of their own. After their service had been held a screen was drawn before the high altar and the Protestants were allowed to use the church for their simpler service.

After passing the second range of mountains we came to a huge hole in the ground from which was issuing a current of cold air. You can enter this cavern and travel a considerable distance, surrounded

on either side by pillars and pinnacles of ice some hundreds of feet long and some hundreds of feet high.

Near these ice caverns you will actually find springs of boiling hot water coming out of the ground. These geysers are smaller, and, unlike those of Iceland, are almost always in work.

Wines of all descriptions are produced. The Imperial Tokay, which belongs to the Imperial Family, who present it to their great friends, cannot be bought for love or money.

Just before we reached the Carpathians we came across some gipsies. Hungary is really a land of the gipsies; there are 250,000 in the country. Wanderers they always have been, and wanderers they always will be; they have tried to settle them, and have built houses for them, but in vain. At one time, if a gentleman lost anything or anything was missing on his farm, the ordinary custom was to gallop to the nearest gipsy encampment, and if the article was not forthcoming to thrash all the gipsies in turn until it was found. They were also the hangsmen. A story is told that a prisoner was condemned and the Court offered a gipsy ten shillings to hang him. "Oh," replied the gipsy, "that is far too much; I would hang all the honourable gentlemen present for that amount."

Now we have reached the Carpathians proper. They are not a number of isolated peaks, but they are a range of mountains with three or four breaks. Their average height is from 6,000 to 9,000 feet high, and you can see them far across the Hungarian Plain. We reached the heights of the Tatra Mountain. Here we found no vegetation, no life whatever; but here and there we came across beautiful little lakes on the mountain sides. These are known as the "eyes of the sea," and are supposed to be connected with the sea. Many old-time legends are current amongst the people with regard to these lakes, and our native guide would not allow me to throw a stone in one of them for fear it should rouse the evil spirit that was lurking in the water.

Sometimes a hot wind blows over from Africa, across the Mediterranean and across the great Hungarian Plain, and this wind will melt more snow (with which the tops and sides of these mountains are covered) in twenty-four hours than the sun would be able to melt in fifteen days. It has been known to melt two feet of snow in three hours.

When we reached the top and looked down into Poland we saw everything very different. There everything was covered with snow and ice for miles. It was quite possible to pass down with the aid of the alpenstock, just as you do in Switzerland. From there we passed into Poland proper. We found the Poles in a very distressing position, and very poor. We had a talk with two of them who were emigrating to America, and from their account we gathered that they would really prefer to be back again in the days of serfdom.

In one visit to Hungary we took something like four hundred photographs. The views I have been able to show you this evening will give you some slight idea of the beauties and wonders to be found in one of the most remarkable and interesting countries in Europe.

THE CARLILE INSTITUTE AT MELTHAM.

THE Carlile Institute, at Meltham, has been affiliated with the Manchester Geographical Society for some years, and Victorians have frequently visited the Institute in the season to lecture. These



THE CARLILE INSTITUTE, MELTHAM.

gentlemen several times called the attention of the members of the Society to the beauty and convenience of the fabric, and to the unique group of buildings at Meltham, consisting of the Institute, the Mechanics' Institution, and the Town Hall, the gift of Mr. Carlile.



The Institute is a model building, and we should be glad if the sight of it would suggest to some of our members that a building like that would be of incalculable value to this Society. Last summer a number of members visited and were delighted with Meltham. Mr. Armitage has placed at the disposal of the Society various photographs, which will give some idea. We were anxious to give some information regarding Mr. Carlile's conception, and as to the details of the Institute.

Colonel Carlile has been good enough to place a report of the opening of the Institute, in 1891, at our disposal, in the *Huddersfield Chronicle*, October 17th of that year, and from that account we extract the following:—

#### OPENING CEREMONY.

Yesterday the public institutions of Meltham were increased by one which promises to be not the least in its sphere of usefulness to the inhabitants of that thriving locality. The Carlile Institute, erected by Mr. J. W. Carlile, furnishes a library, reading-room, concert-hall, etc., each one of which would add materially to the attractions of the neighbourhood. The selection of books made by Mr. Carlile are all excellent. Attached to the catalogue of the library is the following address:—

#### *To the Workpeople at Meltham Mills.*

My Dear Friends,—It is nearly 40 years since you and I first made each others' acquaintance. During that time we have seen many changes, but I feel sure that I am right in saying that one thing has never changed, and that is the cordial relationship that has always existed between us.

No one can visit your beautiful valley, so full of busy industry, without being impressed by the many memorials of the Brook family, the churches and schools, the public grounds, the neat cottages, and Convalescent Home, all proving the deep interest which they have felt in you, and now that I have ceased to be their partner, I have built you an Institute in order that you may keep my "memory green," and I have bestowed my own name upon it, so that in years to come your children may give a kindly thought to him who ever held your best interests very near to his heart.

Having been always fond of books, I desire to foster among you the same taste; you will find in the Institute a carefully selected reference library, and comfortable rooms, where you may have a quiet retreat when the bustle of the day is over, and become familiar with the thoughts and fancies of many a master mind.

I earnestly trust this library, the selection of which has given me great interest, may be well kept up and extensively used. In adding books to it, I particularly wish the trustees not to permit any additions which are at variance with the principles which have guided me in my original selection.

A newsroom is provided for conversation, to be supplied with papers, magazines, and various games, but cards and gambling of any description is strictly prohibited throughout the whole building.

I hope that the hall will often be filled with an amused and edified audience, listening to recitals, lectures, or concerts, but I particularly wish the Institute to be kept free from local or party politics, that all subjects introduced may be strictly moral and

intellectual, not opposed to the teachings of the Bible, nor of a sectarian character.

The adjoining classrooms, although under the same trust, have been built in the first place for the use of the members of the Meltham Mechanics' Institute, of which I was for many years president. My trustees have power to lease it to them yearly, as long as they are satisfied that their work is thoroughly efficient. The Mechanics' Institute will be governed by its own bye-laws.

With an earnest hope that God's blessing may accompany this effort to add to your happiness and well-being,

Believe me, my dear friends,

Yours sincerely,

October, 1891.

JAMES W. CARLILE.



LECTURE HALL IN CARLILE INSTITUTE, MELTHAM.

#### DESCRIPTION OF THE BUILDING.

The building is erected in the Elizabethan, or revived classic style of architecture, with portico of the Doric order, richly moulded windows and string courses, and ornamental gables towards the main street, and side fronts more simply treated but in harmony with the principal elevation. All the wall facings and dressings are of Crosland Moor stone, the walls being lined with brick, with a cavity between outer and inner portions, to exclude damp. The roofs are of high pitch, covered with green Cumberland slates, and crested with red ridge tiles. Entering from the portico through a lobby formed by moulded oak screen and folding doors, there is a spacious entrance-hall, paved with marble mosaic, wide stone staircase, flanked by

handsome hammered iron balustrade and moulded dark oak dado, the ceiling over staircase being panelled and moulded with plaster ribs and enriched cornice. On the ground floor to the right of entrance-hall, are the reading-room and library, together measuring 42 ft. by 21½ ft. The reading-room has a dado of panelled dark oak, and ceiling richly decorated with moulded plaster ribs and cornice. Massive oak tables, specially designed, like all the fittings, in harmony with the style of the building, comfortable arm chairs, and pictures round the walls, complete the furnishing of this beautiful room. The library is entered through a broad archway, and is fitted up with oak bookcases and shelves, well stocked with valuable books. Beyond the entrance-hall is a large news or magazine room, 27½ ft. by 17½ ft., where also quiet games might be played. This room is finished with pitch pine dado, and plaster cornice and frieze of simpler design than in the reading-room. The walls are hung with large maps. On the first floor, entered through moulded oak folding doors, is the lecture-hall, 42 ft. by 21½ ft. and 20 ft. high, with a handsome pitch pine roof of arched shape, panelled with moulded ribs and cornice, and supported by massive curved principals, which spring from carved stone corbels. The dado round this room is of beautifully figured pitch pine, panelled, moulded, and polished. The hall is well lighted by large end and side windows filled with "rippled" glass which subdues the light, and has a pleasing effect; also, at night by three handsome gas coronæ of hammered iron. Its good acoustic properties make it admirably adapted for concerts and recitals, as well as for lectures. Under four of the roof corbels are hung excellent portraits of present and former partners of Meltham Mills, also that of the founder of the Institute. Adjoining the lecture-hall is a large classroom 20½ ft. by 17½ ft., fitted with dado and cornice like the newsroom under it. The detached building in the rear of the Institute contains two large classrooms, specially adapted for technical education purposes, each measuring 27 ft. by 18 ft. The upper one has a lofty open timber roof, and both are fitted with pitch pine dados and hot air stoves. Ample lavatory and cloak-room accommodation is provided. A spacious smoking-room will shortly be provided in the buildings in course of erection, near the Institute, for the purpose of affording by means of their rent roll, an endowment income for the support of the Institute. A principal feature in the decoration of the lecture-hall, staircase, and rooms, are the wise mottoes and homely proverbs which, in varying colours and styles of letters, are painted on the friezes below the ceilings throughout the buildings. These mottoes have been selected with great care and judgment by the founder, and should prove a lasting source of interest and instruction to those who may frequent the building. Much care and attention have been bestowed upon the details of heating and ventilation, in order to provide an ample supply of warm fresh air without draughts or the use of complicated appliances likely to get out of order. The Institute is heated by hot water radiators and pipes. The floors generally are of pitch pine, the ground floors being laid with small wood blocks, laid to an ornamental pattern, and set in damp-proof composition. The doors and wood fittings throughout are made of specially selected oak or pitch pine; in the principal rooms and entrances they are elaborated, moulded, and polished, and the locks,



hinges, etc., are all of a specially good character. The buildings, inclusive of fittings, decorations, and furniture, have been designed by the architect, Mr. J. S. Alder, of Palmerston Buildings, Old Broad Street, London, E.C. The work generally has been carried out in accordance with one of the founder's favourite mottoes, "Do everything well."

The opening proceedings were a luncheon in the beautiful Lecture Hall of the Institute. A distinguished company was present, amongst whom were Mr. W. W. Carlile (the son of the donor), Chairman, and the Bishop of Wakefield. Owing to illness, the donor could not be present. After loyal and other toasts had been honoured, the Bishop proposed "Success to the Carlile Institute." This was accepted with



OUTSIDE THE TOWN HALL, MELTHAM.

cheers, and, in response, the Chairman expressed his regret that his father was not present, but in his absence he would read his speech. First of all he would read a telegram which he had just received. The telegram was as follows:—

"Better, but unable to travel for some days. Wish every success to the trustees and the Institute. Thank friends for their kind wishes."

The address written by Mr. J. W. Carlile was as under:—

"The kind and flattering words from my friends have gratified and given me the assurance that my hopes may be fulfilled, and that this building will really be the scene of much usefulness. So much has been provided in this valley by the liberality of the various members of the Brook family for the religious and educational wants

of our people that any further extension in that direction is not called for. But years ago, when I was president of the Meltham Mechanics' Institute, I felt that the time would come when better accommodation would be required for classes and lectures. In addition to this, as I get older I feel a desire to escape from the bustle around me, and so I conclude that many here who are getting on in life, as well as those who have retired from daily work, would gladly seek a retreat made bright and interesting by books, lectures, and entertainments. This explains to you why this Institute is divided into two distinct departments, the portion in which we are now met being set apart for members above 21 years of age. I have chosen the Elizabethan style of architecture, as it is one of which I am very fond. My house in Bucks was built at that period, and I always experience in its bright and chaste architecture a style highly suited for quiet repose and study, and consequently most suitable for an Institute of this kind. Two years ago when I relinquished my interest in these works to my younger partners, I felt a strong desire to leave some permanent proof of the deep interest I have always felt in our workpeople. I therefore invested a sum of money, hardly knowing at the time the form in which it should be expended. Along with my excellent architect and the clerk of the works, we formed ourselves into a most harmonious committee, and I am delighted to find that our labours have fully realised our wishes. This building has afforded me so much interest that it is almost with a pang of regret that I see its completion. I now long to see this pet work realise its destiny, and I have asked kind friends to take it into their keeping so that it may be a blessing to this neighbourhood. Some kind friends have hinted that a little extravagance has attended my functions as a trustee, but let me assure them that such is not the case. The invested money has been entirely devoted to building and furnishing the Institute and cottages. The pictures, maps, and decorations are supplied as a pleasing addition to the original scheme. I have now to perform the pleasing duty of proposing the health of the trustees and the members of the two committees—one committee devoting itself to the portion set apart for the older members, the other taking the name of the Mechanics' Institute, will I trust carry out some good technical classes, and prove of inestimable value to the rising generation. The trustees whom I have chosen are three members of my own family; my son, my son-in-law, and my nephew, along with a son of my old esteemed partner, Mr. Brook. I have also chosen the first committee, many of whom I have long known and esteemed. In their hands I place the management of the Institute and the adjoining properties, from which a portion of the endowment will be obtained, feeling confident that they will use their utmost endeavours to make it a success when the Mechanics' Institute is managed by their own officers and committee."

The Chairman added his own thanks for the reception of the gift, and the kind words which had been used concerning it.

Mr. E. H. Carlile responded to the toast, dwelling upon the work of the Mechanics' Institute in the past, and the deep interest which Mr. Carlile had always evinced in its work. At the present time the Mechanics' Institute was at work in two small rooms, but it had done good work there. He dwelt upon the importance of technical educa-



tion, holding it absolutely necessary for the future maintenance of our trade. In the words of one who had been much quoted, he would say that if knowledge was not virtue, ignorance was weakness, and he trusted advantage would be taken of that Institute to dispel ignorance. He promised, on behalf of the trustees, that they would attend to their part of the work, and endeavour to carry out the wishes of the founder.

Mr. James Kilburn also replied. That structure was a beautiful one, the material and workmanship being of the best possible description. He trusted that all the anticipations of the founder would be realised, and so far as the committee were concerned they would do their best to realise them. The building would certainly prove an enduring one, and he trusted would be an immense benefit to that locality. There were great social problems before us. It was no use ignoring them, and he held that to get the people to read and think would be the best way of preparing for a solution of those problems. In that way that Institute might do untold good.

Other toasts were duly honoured.

In the evening a meeting was held in the Dining-room, Meltham Mills, presided over by Mr. E. H. Carlile, to celebrate the opening. Since that meeting the Institute has pursued a career of great usefulness.

These buildings are not by any means the only gifts to the Yorkshire town from the members of the firm of Messrs. Brooks and Co., of Meltham Mills, but they are the ones to which our especial attention was directed.



IVY COTTAGE. MR. ARMITAGE'S GARDEN AND HOUSE, MELTHAM





[By permission of Mr. R. E. Ruddock, Newcastle-on-Tyne.]

THE LATE MR. G. E. T. SMITHSON.  
First Secretary Tyneside Geographical Society.

The Tyneside Geographical Society has erected, in the Institute at Barras Bridge, a Bronze Tablet to the memory of Mr. Smithson, with the following words upon it:—

TYNESIDE GEOGRAPHICAL SOCIETY.

---

IN HIGH APPRECIATION OF

THE SERVICES OF

**George Edward Temple Smithson,**

CO-FOUNDER AND FIRST SECRETARY,

1887—1899.

# CUTTING OF THE FIRST SOD OF THE MANCHESTER SHIP CANAL.

This illustration has for us all a melancholy interest.

On receipt of the telegram of the final passing of the Ship Canal Bill, in August, 1887, Mr. Alderman Bailey's children took their spades and barrow to the bank between Eccles and Barton, and had a little sod cutting on their own account. The boys were Mr. Fred Bailey, Mr. Percy Bailey, and Mr. Charles Bailey. Since then Mr. Percy Bailey (who has his foot



CUTTING THE FIRST SOD OF THE MANCHESTER SHIP CANAL  
BY ALD. W. H. BAILEY'S CHILDREN.

on the spade in the picture) went to Cambridge, and took his degree as B.A., and LL.B., and shortly afterwards fell from his bicycle and was killed. The youngest one, Charles, died at Fettes College of diphtheria. The other boy, Mr. Fred Bailey, is now (1900) the manager of the Iron Foundry at the Albion Works, Salford.

We all sympathised with Sir W. H. Bailey on the sad loss of these two clever and promising young men; and we are obliged to him for allowing us to reproduce this photograph.



## NEW BOOKS.

---

COMMERCIAL GEOGRAPHY OF THE BRITISH ISLES. By A. J. HERBERTSON, PH.D., F.R.G.S. London: W. and R. Chambers, Ltd. 1899. Several maps and tables; no index. 140pp. Price 1s.

DR. HERBERTSON, in this small but useful handbook, deals with the subject which he calls "Economic Geography," or the "Geographical conditions which help man to make a living"—a definition surely broad enough. He deals with the subject concisely and clearly in ten chapters, with several tables which will be useful for reference to an earnest teacher.

The chapters are—Physical condition of Britain, Biological condition of Britain, Distribution of minerals and mining centres, Distribution of manufactures, &c., Trade routes and centres, Food supply, Imports of raw materials and manufactured articles, Exports, The great trade routes from the British Isles, and The trade of the United Kingdom.

"THE REPUBLIC OF COSTA RICA." By GUSTAVO NIEDERLEIN, Chief of Scientific Department, The Philadelphia Commercial Museum. 128 pp. with map. 1897-1898. No index.

THIS is a small monograph issued by the Philadelphia Commercial Museum and is of considerable value. The Country is treated of in chapters—Topography, Geology and Minerals; Climate; Character of Vegetation; Fauna; the Aboriginal Inhabitants; Population; Immigration and Colonies; Public Instruction; Transportation; Agriculture and Live Stock; Commerce and Industry; Finance and Banking; Political Organisation and History. Considerable information is given on all these points, but it is a pity that the four pages of names of native woods do not contain the botanical names, which have not been attached. As the list is now it cannot be of much use. The monograph gives a cheerful view of the resources and possibilities of this small Central American State.

JOURNALS AND PAPERS OF CHAUNCY MAPLES, D.D., F.R.G.S., late Bishop of Likoma, Lake Nyasa, Africa. Edited by ELLEN MAPLES. Portrait, map, and index. 278pp. Longmans, Green and Co., London, 1899. Price 6s. 6d.

THIS is really a continuation and supplement to the life of Bishop Maples mentioned in Vol. XIV, page 23, and is very welcome. Miss Maples has not only done good service to the memory of her brother, but also to those important interests represented in her brother's life work. We were always charmed by the presence of Chauncy Maples, and keeping before us the excellent likeness, we can in these serious, but breezy extracts from his journals and notes, almost recall the touch of his vanished hand and the tones of his charming voice. There has been great restraint in the selection of what to publish. The journey to the Mato Country in 1881 (the district south of the Rovuma), which he was the first European to explore, and where he heard of Joseph Thomson's (not Thompson's) researches for coal, is interesting, as indeed are the journals of his journeys in that which is to-day German and Portuguese East Africa. The work he did for geography was very great, and performed amidst much difficulty and sickness. The geology, the folklore, botany, and the Yao and Angoni habits and languages were carefully studied, and the results of his enquiries were freely laid before the Royal and our own society, and were placed at the disposal of many others. We appear in these two books to get into the workshop, and be able to see how the work was accomplished. It was a mysterious stroke which on the very threshold of a more perfect and complete life work, struck him down in Lake Nyasa, where the waters closed over him and ended a career for which he seemed for so many years to have been preparing. We are pleased that his sister has placed these records at our service.

ESTUDIOS ETNOGRÁFICOS. Primera Serie. By FELIX F. OUTES. Buenos Aires. Martin Biedena e Hijo, 1899. 88pp. (with a bibliographical list and index).

THIS is a reply to Dr. Yellabos and Dr. Brunton of Philadelphia and a criticism of their papers on the ethnographical problems of the Rio de la Plata. Mr. Outes enters into the questions and deals with them, using documents for his purpose which have not been before published. The questions in relation to the aborigines of these districts are most interesting, and this is a useful contribution.

SPIDERLAND. By ROSE HAIG THOMAS. London: The Chiswick Press. 1898. Five coloured plates and about 46 illustrations. 166pp.

A BOOK about frogs, spiders, moths, earwigs, green fly, weevils, wasps, ants, and flowers. A book for children who have learnt to read; delightfully written. Some of the stories have a moral; those of "the lady chrysanthemum" and the "impertinent earwig" are very plain. It is just a book a youngster would wish to have in the holidays, and older persons might read with profit. Master Thomas should be a happy boy if his usual lessons are imparted to him after this fashion.

BIBLIOTHEK DER LÄNDERKUNDE DER OSTAFRICANISCHEN INSELN. Von Professor Dr. E. KELLER. Berlin: Schall and Grand. 1898. Preface, list of contents, 190pp. bibliography; index; several maps, full page illustrations, and numerous illustrations and small maps in the text.

THIS is a most attractive and interesting geographical description of the islands of East Africa, Madagascar, and the smaller islands adjacent; Réunion, Mauritius, and Rodriguez; the Seychelles and other small islands.

It is well done, beginning with the surface geology and proceeding to a complete geographical description of these most interesting islands. The monograph is well illustrated.

"ARABIC (Syrian) SELF-TAUGHT." By C. A. THIMM, F.R.G.S. Crown 8vo., 96 pp., in blue imitation-leather paper cover, to sell at 2/-. Third edition, revised. E. Marlborough & Co., London, 1899.

THIS little hand-book has been carefully revised by Professor G. HAGOPIAN, who has made various emendations and improvements in it. The work is an elementary and practical treatise on the language, the Arabic characters being used, with a concise grammar and an English-Arabic Dictionary, together with a correct English phonetic pronunciation of every word and phrase; the transliteration being arranged in accordance with the scheme adopted at the last Congress of Orientalists. It may be doubtful if this book is sufficient to enable an accurate knowledge of Arabic to be obtained therefrom. But it may have uses and would under some circumstances be very useful.

CAVE REGIONS OF THE OZARKS AND BLACK HILLS. By LUELA AGNES OWEN. Cincinnati Publishing Co. 1898. With many illustrations; no index. Price 1½ dollar.

THIS is a small book containing an account of cave hunting in the districts named. The caves particularly examined are the Marble Cave, the Fairy and Powell Caves, the Oregon County Caves, the Grand Gulf, the Wind, Onyx and Crystal Caves, with some account of the Black Hills and Bad Lands.

There are no very exciting incidents in the book, but some considerable discomfort was endured by the explorers.

It is a very interesting account of a region and of natural phenomena not usually present to the minds of European cave hunters, and, apart from the interesting way the account is given, will prove useful to those in the Old World who are studying the subject.

# PROCEEDINGS OF THE SOCIETY.

OCTOBER 1ST TO DECEMBER 31ST, 1899.

The 518th Meeting of the Society was held in the Library, on Tuesday, October 10th, 1899, at 7-30 p.m. In the chair, Mr. S. OPPENHEIM, J.P., Honorary Treasurer.

The Minutes of the following Meetings were read and approved:—April 18th (511), April 24th (512), April 29th (513), May 6th (514), May 13th (515), June 3 (516), June 16 (517).

The following presentations were announced:—"Dyer's Routes and Mineral Resources of N.W. Canada," by Mr. S. H. Brooks. "Histoire de Pologne," two vols. and Atlas, By Alderman J. Hopkinson. "Topographical Dictionary of England," four vols. folio, by Mr. George Thomas. "Handbook to Owens College Museum," the Curator. "Sketches of Southport, and other Poems," by T. Costley, the author. And many others.

TO THE MUSEUM.—Object Lesson Cabinet No. 3, "Natural Products," by Messrs. Arnold and Son, Leeds. Specimens of various kinds of Raw Cotton, Mr. F. H. Silberbach, Liverpool.

## PORTRAITS OF MEMBERS.

His Royal Highness the President (presented by a Member), Mr. John Mather, Dr. Worswick, Mr. George Thomas, and Mr. C. A. Scott.

## NEW MEMBERS.

The election of the following new members was announced:—

ORDINARY: Mr. W. J. Crossley, J.P., Mr. James F. Spence, Mr. Councillor Hailwood, Dr. R. G. Heathcote, Mr. Councillor N. Bradley, J.P., Mr. Collmann (Consul for the Empire of Germany), Mr. Alderman E. Guthrie, J.P., Mr. G. H. Pownall, and Dr. Coutts.

HONORARY: Lieut.-Col. J. R. Macdonald, R.E.

AFFILIATED SOCIETY: Moss Side School Board.

## CORRESPONDENCE.

The following correspondence was referred to, and laid upon the table:—

Royal Geographical Society, Mr. John Angell, Alderman J. Hopkinson, J.P., Mr. Fred Garlick, Rev. S. A. Steinthal, F.R.G.S., Mr. William Johnson, Mr. H. Nuttall, Mr. F. W. W. Howell, F.R.G.S., Dr. F. H. Worswick, Lady Leech, Mrs. Lois Marsden, Mr. W. Jackson, Mr. F. H. Silberbach, Mr. S. L. Keymer, F.R.G.S., Mr. S. H. Brooks, F.I.Inst., Miss Blanchoud, Mr. W. C. Armitage, Messrs. Philip, Son, and Nephew, Councillor Joseph Berry, Mrs. E. Grafton, Mr. S. Oppenheim, J.P., Mr. Edwards, Mrs. Isa Smithson, Mr. W. T. McMullon, Mr. E. W. Mellor, J.P., Messrs. Thomas Cook and Son, Mr. J. D. Wilde, M.A., Mr. T. R. Wilkinson, Mr. Henry Linaker, Mr. George Thomas, Mr. S. H. Hare, Mr. Geo. F. Taylor, Right Hon. Lord Mayor of Manchester, Mr. H. Woolley, F.R.G.S., Rev. F. Galpin, Messrs. Gibson and Sons, Rev. Thos. Wakefield, F.R.G.S., Mr. Joel Wainwright, J.P., Mr. Thomas Costley,



Miss Ada Baxendell, Mrs. W. Agar Renshaw, Messrs. Dean and Dawson, Mr. Fred Keefer, Sir F. A. Abel, K.C.B., F.R.S., Captain H. J. Coningham, F.R.G.S., Mr. W. R. Anthony, Mr. C. A. Clarke, Mr. D. F. Howarth, Mr. Fred Taylor, Mr. Charles W. Sutton, Rev. F. C. Smith, F.R.G.S., Mr. H. Handcock, Mr. E. Scammell, Mr. C. E. Schwann, M.P., Mr. T. Dentith, Mr. J. Howard Reed, Miss C. Mabel Richardson, Mr. M. J. Logan (Assistant Secretary, Canadian Institute), Mr. J. R. Rigby, Mr. M. B. Slater, Mr. C. H. Bellamy, F.R.G.S., Mr. H. W. Simpson, Alderman I. Bowes, Mr. S. J. Baronian, Col. George Earl Church.

Mr. S. WELLS, F.R.G.S., of Richmond, addressed the Society on Hungary, being an account of his visits to Hungary, Transylvania, and to the Carpathian Mountains, and illustrating his address with special lantern slides. The points referred to by Mr. Wells were the modern home of Magyars, Slovaks, Roumans, Saxons, and Gipsies; the Blue Danube across the Great Plain; curious costumes and customs; ravines and pot-holes; vanishing rivers; exploring the underworld; ice caverns and boiling springs; chalk cliffs and primeval man; troglodytes of to-day; a Slovak dinner; forest scenes and slides; the Saxons, and a sequel to the Pied Piper; divorces to order; a gipsy flitting; the snowy Tatra, its crags and lakes; climbing the Carpathians; across fields of snow to Poland; Eljen Magyarland!

The CHAIRMAN moved a hearty vote of thanks to Mr. Wells for his able and interesting address.

Mr. W. T. EVANS seconded the motion, which was carried, and Mr. WELLS responded.

The 519th Meeting of the Society was held in the Library, on Tuesday, October 24th, 1899, at 7-30 p.m. In the chair, Mr. JOHN THOMPSON.

The minutes of the previous meeting were read and approved.

The election of the following members was announced:

ORDINARY: Mr. George Hervey Wood, Mr. Robert Barclay, J.P., Mr. C. H. Megson, and Mr. James F. Power.

AFFILIATED SOCIETY: The Farnworth-with-Kearsley Mutual Improvement Society.

#### CORRESPONDENCE.

The following correspondence was read: Mr. H. Nuttall, Mr. T. Dillon, Mr. C. E. Schwann, M.P., Rev. S. A. Steinthal, F.R.G.S., Mr. J. P. Thomson, Mr. S. Wells, F.R.G.S., Mrs. E. R. Bull, The Hon. J. H. Choate, Mr. S. H. Brooks, F.I.Inst., Mr. John L. Lowe (Head Master, National Schools, Disley), Mr. James Ward, Mr. T. Collins, Mr. S. J. Baronian.

#### PRESENTATIONS.

The following presentations have been made to the Society: "Physiography," H. C. Martin. Map of South Africa (Currie and Co.) Large wall map of Africa (W. and A. K. Johnstone). "Bibliothek der Landerkunde," vol. 1, Antarctic. "Bibliothek der Landerkunde," vol. 2, African Islands. "Year Book of British Columbia," 1897, "Handbook of Canada," 1897, The High Commissioner for Canada. "Fourth Scientific Campaign of Princess Alice." "M. Robeske's Travels in Central Asia," 1893-1895. Institute Colonial Internationale, Bruxelles, series of vols. "Tourist Pocket Map

of England and Wales;" "Pocket Atlas of Scotland;" "Pocket Atlas of Ireland;" "Pocket Atlas and Guide to London," etc., J. Bartholomew. "Gold Coast, Past and Present," G. Macdonald (Longmans, Green, and Co.). "Illustrated School Geography," A. J. Herbertson (E. Arnold). "Colonial Books," presented by Imperial Institute. "Atlante Scolastico, per la Georg., Fis. and Pol," by G. Pennesi (Institute Cart. Ital.) "Wide World Atlas of Modern Geography," J. S. Keltie. "Norwegian Maps" (Norwegian Cartographic Institute). "Notes on Folklore of the Fjort" (R. E. Dennett). "Commission on Balatonsee," five vols. (Budapest Society). "Sketches of Southport," etc. (T. Costley). "Spiderland," (R. H. Thomas). "Abstract of Statistics of Victoria, 1893-1898" (The Agent-General of Victoria). "Bristol Museum" (H. Bolton). "Man and his Work," A. J. Herbertson (A. and C. Black).

#### PORTRAITS OF MEMBERS.

The following portraits of members were received: The Right Hon. A. J. Balfour, M.P., the Right Rev. Bishop Hanlon (Victoria Nyanza), the Most Reverend Monsignor Gadd, V.G., his Eminence Cardinal Vaughan, Councillor Hassall.

The SECRETARY reported his attendance, as a delegate from the Society, at the meeting of the British Association at Dover.

After giving his report as delegate, Mr. SOWERBUTTS gave an interesting description of Dover and the neighbourhood, with lantern views, and exhibited a collection of shells, fossils, and other specimens.

Hearty thanks were given to the delegate, and the proposed letter on the work of the delegates to the Secretary of the British Association was approved.

The 520th Meeting was held at the Grammar School, on Friday, November 3rd, at 2 p.m. In the chair, Mr. J. E. KING, the High Master.

The Rev. S. A. STEINTHAL, F.R.G.S., addressed the meeting on Andalusia, and illustrated his address with a number of fine slides, specially prepared by the "Victorians" for this address.

Hearty thanks were given by the High Master on behalf of the boys to Mr. Steintal.

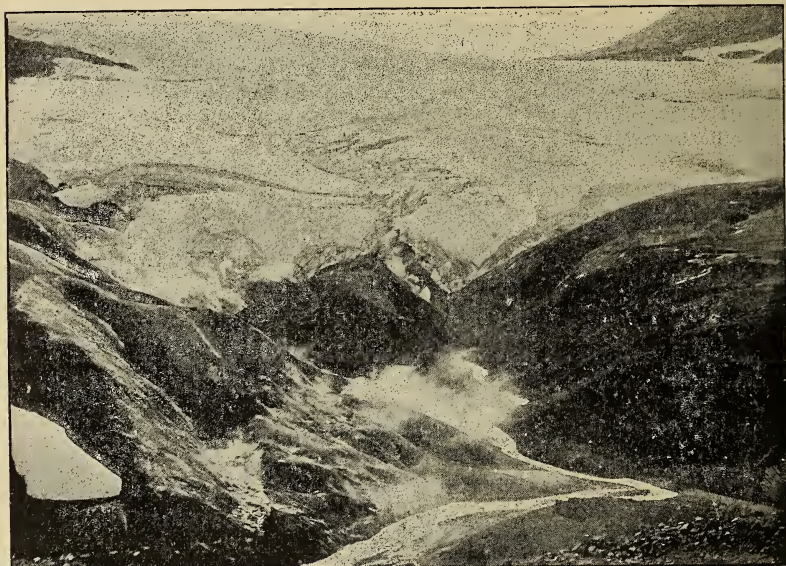
The 521st Meeting of the Society was held in the Coal Exchange, on Tuesday, November 7th, 1899, at 7-30 p.m. In the chair, Mr. S. OPPENHEIM, J.P., Honorary Treasurer.

Mr. F. W. W. HOWELL, F.R.G.S., of Birmingham, addressed the Society on his recent crossing of the great Icelandic glacier, the Lång Jökull. The address was illustrated with a series of beautiful lantern slides, made from photographs taken by Mr. Howell on his journey.

#### THE FIRST CROSSING OF LÁNG JÖKULL (ICELAND).

This, the second in size of the Icelandic ice sheets, covers about 500 square miles. It derives its name from its length, which is 30 miles. Occupying a position almost in the centre of the island, the weather is generally finer than on the great glaciers which fringe the south coast. The present journey was made in August, 1899. Starting point, Reykjavik, the capital

of Iceland. Route by Thingvellir, the seat of the Parliament of 1,000 years ago, and Kaldidal, skirting on the passage the magnificent series of true glaciers descending from the jökull, as the whole mass of glaciers, héve, and mountains is called. The position overhanging Kaldidal is known as Geitlands jökull, and attains a height exceeding 5,000 feet. This part was visited by Olafson and Borelson at the end of the last century. Mr. Howell's headquarters were fixed at Kalmaustunga, in the neighbourhood of which are charming woods and curious waterfalls issuing from beneath lava beds, curtained with birch thickets. Here, too, is Surtshellir, the largest lava cave in the world. A camp was fixed on August 1 at Toifabœli, near the ice, which was reached at Flosaskarh, between Eireks jökull and Lång jökull by 8-30 a.m. on August 2. The pack train was despatched around the north-east end of the glacier, and Mr. Howell accompanied by Mr. Stoughton-Holborn and Mr. Barrett, of Merton College, Oxford, reached the top of the central ridge at 9 that night, dragging



*By permission of F. W. W. Howell.]*

#### HOT SPRINGS AND GLACIER ASGARDÁN.

Kerlingujökull, West of Arnarfells, Jökull, Iceland.

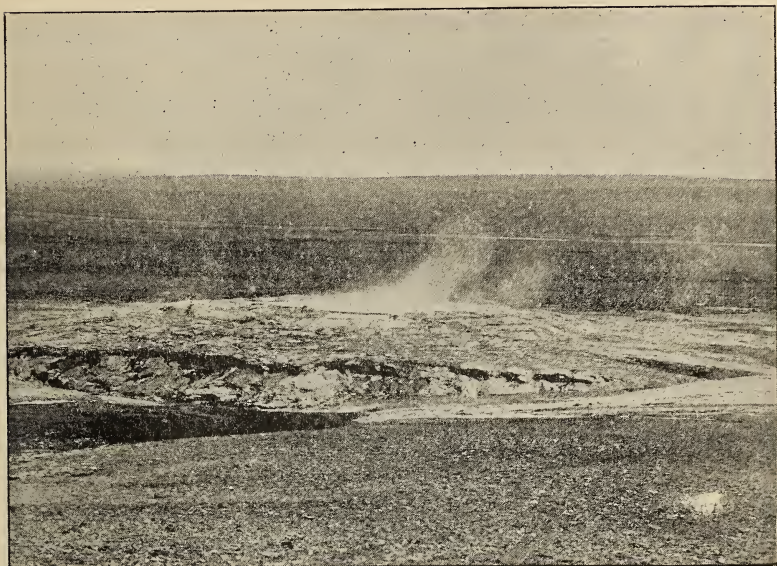
tents, food, and necessities on two sledges, one of which was drawn by a couple of Icelanders, with help from members of the party. On the following day they followed the main line of the dorsum north-east, and camped again near a little hill, reflection and radiation from which had thawed a "moat" in the ice 150 feet wide and 100 deep. On the third day they reached "land" at Fagrahlid, near the fine hot springs of Hveravellir. The prospect from the higher level covered Iceland from Snaefells jökull to Vatna jökull—100 miles each way. The height of the main ridge is 4,000 feet, and the ice comes down to 2,000. Around the glacier are very many boiling springs, and near it is the famous Geysir.

Several questions were asked, to which Mr. Howell replied.

Mr. HARRY NUTTALL moved a resolution of thanks to Mr. Howell for his able and interesting address.



Mr. F. J. ROBERTSHAW seconded the motion, which was carried, and Mr. Howell responded.



[By permission of F. W. W. Howell.]

THE GEYSIR. ICELAND.

The 522nd Meeting of the Society was held in the Memorial Hall, on Wednesday, November 15th, 1899, at 7-30 p.m.

In the chair, Mr. Alderman ISAAC BOWES.

Col. J. J. MELLOR, J.P., M.P., addressed the Society on "Egypt and the Monuments," and illustrated his address with a fine series of Woodbury photographic slides, which were shown on a 30 by 30 feet sheet by Mr. E. W. Mellor, J.P.

The following report is from the *City News*:—

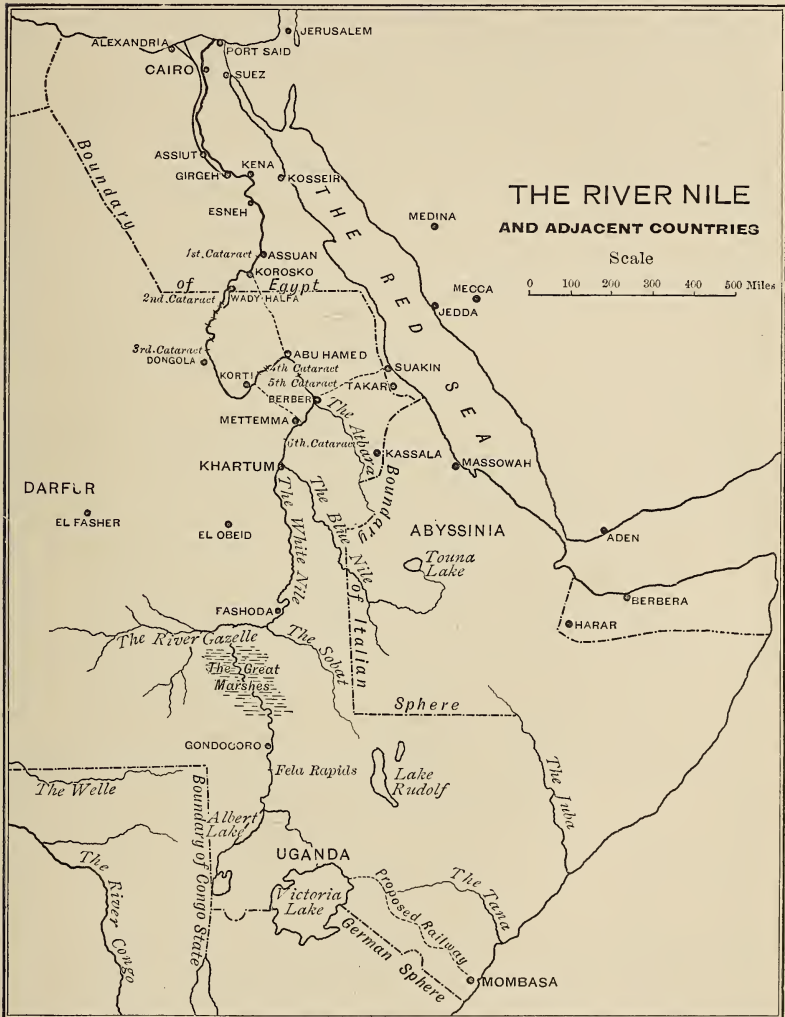
A lecture descriptive of Egypt and its ancient monuments, as well as of the life and work in the country of to-day, was given by Colonel Mellor, M.P., on Wednesday evening, in the Memorial Hall, Albert Square. It was a meeting of the Manchester Geographical Society, and the hall was crowded with the members. Both as a visitor to Egypt and a sympathetic student of many years' standing Colonel Mellor has made the subject his own, and during his two hours' discourse he was followed with the closest attention and interest by the audience. His pleasant, chatty description of places, objects, and people was made additionally attractive by a varied collection of fine pictures, Mr. E. W. Mellor giving his able assistance at the lantern. Starting from Cairo, the audience made the journey along the Nile, with Colonel Mellor as guide, visits being made on the way to the greatest of the pyramids with its companion Sphinx, the temples of the ancient Egyptians, with their wondrous sculptured inscriptions and figures; the famous Valley of Tombs, and the rock temples of Abou Simbel in Nubia. With these old-time ruins alternated scenes and incidents of the life of to-day, the whole forming a graphic story of the past and

present. With regard to the present natives, Colonel Mellor described them as industrious and home-loving, and as to the general life, especially in such a place as Cairo, it had, he said, been well defined as a combination of the old Bible narrative with the Arabian Nights' Entertainments.

Colonel MELLOR explained that there were four principal reasons why the land of Egypt must always be interesting to people living in these latter days. One was the extreme antiquity of the country, Egypt being admittedly the most ancient nation of the world; its long and intimate connection with the Bible narrative; the high state of civilisation which was found existing in the Valley of the Nile at the very earliest period to which its monuments guided us; and the interest which all Englishmen must take in a country which, in the most recent of all the many historical vicissitudes through which it had passed, had become so intimately associated with and dependent upon Great Britain for its stability and prosperity. Not only was old Egypt famous for her monumental works, but for her learning and wisdom. Whilst it was his intention to bring before the audience the works of the kings of Egypt who were coeval with Moses and the patriarchs of Scripture history, and of kings long antecedent even to that early age, he felt that whilst those remains of a by-gone age must ever have a fascination peculiarly their own, there were some minds who were only interested in the present, and who would want to know something of the Egypt of to-day. It might truly be said that from the days of the Pharaohs to the time of the occupation of Egypt by the British at the time of the revolt of Arabi in 1882, the Fellaheen had known nothing but oppression and cruelty. The previous ruler, Ismail Pasha, came to the throne in 1863. The public debt was then a little over three millions sterling. In 1879, when Ismail was dismissed at the joint request of England and France, the debt had increased to eighty-nine millions sterling, with nothing to show for it. Corruption was universal amongst all the Government officials, as well as in the administrators of justice. The patient, long-suffering Fellaheen had been persistently robbed of their hardly earned substance under the torture of the bastinado by rapacious pashas who farmed the taxes, but this was no new thing to the unfortunate Fellaheen. For three thousand years, until the time of the British occupation, they had known no other treatment. The state of moral and industrial bondage had lasted from the earliest times until England came to the rescue. And it was only in 1890 that the "corvée," that is, forced labour without wages, and the "courbash," that is, the stick, were finally abolished in the land of Egypt. It was quite true that a certain proportion of the able-bodied peasantry were still obliged to serve a certain number of days as watchmen when the Nile was in flood, which was absolutely necessary to keep up the banks of the canals, so as to prevent disastrous floods, but they are now paid for doing this. During the year he (Colonel Mellor) was in Egypt the irrigation budget was over £700,000, but of this, £400,000 went to pay the wages of the watchmen on the canal banks. Before the English occupation these men would have got neither wages nor food. The increased prosperity of Egypt was witnessed in the remarkable increase in the population, 43 per cent in fifteen years, in her greatly increased trade and commerce, in the extension of her canals for irrigation, and railways for her ever increasing traffic, in the increase of her shipping and means of education, and in the diminution of her public debt and the amount of the land tax payable by the cultivators of the soil. There was shown upon the screen a large skeleton map of the Nile, showing the position of the principal monuments and ground plans of the temples of Luxor, Carnac, Edfou, and Abou-Simbel. Colonel Mellor described Egypt as being nothing more than a long narrow strip of country, which the waters of a great tropical river diffusing themselves, or diffused by man's labour to the utmost extent possible, reclaimed to productiveness from the sands of the great African desert. In the well-known words of Herodotus, "Egypt was the gift of the Nile." The length of the Nile from the Mediterranean to Khartum was 1,800 miles, and from Khartum to Lake Victoria Nyanza 1,600, or a total of 3,400 miles. After explaining the phenomenon of the annual overflow of the Nile and the important fact that at the time of the overflow the waters of the Nile held in suspension a large quantity of rich black mud, brought down from the

mountains of Abyssinia by that important branch of the river known as the Bar-el-Azrek, or Blue Nile, Colonel Mellor remarked that it was the presence of this black mud which had made the land of Egypt a proverb of fertility from the earliest period of its existence.

The methods used to irrigate the soil were various. During the inundation the Nile rose 45 feet at Assouan, 38 feet at Luxor, and 25 feet at Cairo.



During the high Nile much of the land was irrigated by gravitation. As the water fell it was raised to the requisite level by very simple contrivances, known as shadoofs and sakkiehs. In Egypt there were 70,000 shadoofs and in Nubia 34,000 sakkiehs. So fertilising was the mixture of Nile water and Nile mud, that no sooner had the water subsided than, as somebody had said, "They tickled the earth with a hoe, and it laughed with a harvest." The shadoofs required the labour of



150,000 men, and the sakkiehs of 60,000 animals to work them. The question of irrigation brought him to speak of the great works which were now in progress for constructing two immense dams across the Nile, one at the first cataract at Assouan, below the island of Philae, and the other about 300 miles lower down the river at Assiout.

These important works were designed to have far-reaching consequences in promoting the prosperity and adding to the wealth of Egypt, and with those works the name of Mr. John Aird, M.P., would be imperishably associated. The surveys had been made and the works designed by that eminent engineer Sir Benjamin Baker. The striking success which had attended the reconstruction of the barrage or great dam below Cairo had given every encouragement to the scheme for constructing the great dams in progress. The Cairo barrage constructed by Mehemet Ali had been a failure from the first until Mr. Willcocks, who had been described as the greatest irrigation engineer of modern times, took it in hand at the request of Sir Colin Scott Moncrieff. The French engineers had been tinkering at it for twenty years without success, and it was actually proposed to blow up and remove the entire structure. Mr. Willcocks, however, at a cost of £460,000, a much less sum than it would cost to destroy and remove it, made the structure permanently watertight. The tax or rent for the additional land brought under cultivation in the Delta had repaid the cost ten times over, whilst the increase in the quantity and value of the crops produced had been enormous. The sugar crop alone had increased from 31,000 tons in 1883 to 70,000 in 1894, whilst the value of the cotton crop had increased in two years by two and a half millions sterling. Since the reconstruction of the barrage the extent of the cotton crop had quadrupled.

But far larger results were expected to flow from the construction of the Aird dams, for so they ought to be called. The magnitude of those works would be realised when he said that above Assouan there was to be an African lake constructed more than double the size of Loch Lomond. It was said that the summer level of high Nile, after the reconstruction of this dam, would extend 140 miles back into Nubia. In like manner the dam at Assiout, although it would only raise the level of high Nile ten feet, the waters would form a lake extending backwards 40 miles, and as the river at that point was three-quarters of a mile wide, the total storage of water would be enormous. These immense works, when completed, would almost double the cultivatable land in Egypt. Millions of acres of arid desert would be converted into fertile land, and cattle innumerable would find abundant pasture upon what then were only sandy wastes. For seven hundred miles along the river banks some five million of human beings would be blessed by the fertilising streams, and famine would no more afflict the land. Surely, if ever a country was benefited by a foreign occupation, it was that ancient and mysterious land of Egypt under the sway of Great Britain.

Of the entire trade of Egypt, 53 per cent was carried on with England, whilst with France and Austria combined it was only 9 per cent. And of the total tonnage through the Suez Canal in 1897, the United Kingdom owned 68 per cent, whilst France only owned about 6 per cent. These few facts proved conclusively how immensely the interests of Great Britain in Egypt transcended those of all other countries. Owing, however, to the unfriendly attitude of France, the great scheme for the construction of the new irrigation works would have collapsed had not Mr. John Aird and a band of British capitalists come to the rescue two years ago, and offered to construct the works upon terms which would leave Egypt with practically nothing to pay for them. It was stated by Mr. Ward that at the end of three years the contractors would receive £177,000 a year for thirty years, but this sum would be recouped to the Egyptian Government ten times over by the vast addition to the cultivable land in Egypt and by the greatly increased productiveness of the land already cultivated. One striking fact was mentioned by Mr. Ward. In April last the contractors asked the British public to lend them £400,000 for this work at 4 per cent. in a few hours, in London alone, the application for this loan amounted to eleven millions sterling. Colonel Mellor illustrated his remarks on this subject by a number of fine photographs shown on the screen, which enabled

the audience to realise the extent and importance of the great engineering works now in progress, on which 25,000 men are employed.

The chief characteristics of the principal Egyptian monuments were described, including the great pyramid of Choofoo, the Great Sphinx, the Temples of Carnac and Luxor, and of Abydos, Denderah, and Edfou, ending with the great Rock Temples of Abou-Simbel in Nubia. The beautiful temples in the Island of Philae, shortly to be partially submerged, came in for special notice, and were shown on the screen with some specially fine photographs. Colonel Mellor also dwelt at some length on the written system of the ancient Egyptians, and called attention to the fact that all the Egyptian monuments and temples were covered on every available surface with pictures in relief and with hieroglyphic texts explaining those reliefs, and there was not one of those reliefs which was not history. He concluded his lecture by exhibiting on the screen life size portraits of the mummies of two of the greatest of the Pharaohs, Seti the First and Rameses the Second. The former was the father of Rameses the Second, and built the beautiful temple of Abydos and the Great Hall of Columns at Carnac. Rameses the Second would go down to all time as the Pharaoh who oppressed the Israelites, but he was undoubtedly the greatest of all the Pharaohs. He maintained an enormous standing army, his conquests extended over nearly all the known nations of antiquity, and it was said that he built a temple in every city in Egypt. His embalmed body was only discovered twenty-eight years ago. He must have been six feet three inches in height. Wasted and shrivelled as his remains then were through the embalming process, he still exhibited in his tall and broad-shouldered frame, a masterful, stern, and majestic appearance. It was surely not the least remarkable thing among the many wonderful things connected with the land of the Pharaohs, that after the lapse of 3,200 years they should be able to stand face to face with the greatest of all the Pharaohs, and that they were standing in the same presence in which Moses stood when he vainly implored his Lord the King to let the Children of Israel go. The Israelites were scattered over the world, the great works of the Pharaohs were crumbling into ruins, whilst that great king, that stern and ruthless warrior, still remained,

Not like thin ghosts or disembodied creatures,  
But with his bones and flesh and limbs and features.

Several questions were asked in reference to the age of the monuments and to the new dams.

Colonel MELLOR replied to the questions.

Mr. J. HOWARD REED moved, and Mr. C. J. HURST seconded, a vote of thanks to Colonel Mellor, to Mr. E. W. Mellor, and to Mr. A. Mackillop for the loan of photographic slides. Carried unanimously.

Colonel MELLOR responded.

---

The 523rd Meeting of the Society was held in the Library on Tuesday, November 21st, 1899, at 7-30 p.m.

In the chair, Mr. FRITZ ZIMMERN, a Vice-President, and the senior Honorary Secretary.

The Minutes of the two previous meetings were read and approved.

The election of the following members was announced:—

ORDINARY: Mr. E. Hinners, Mr. John Cocks, Mr. Thomas Atkinson, Mr. William Wilson, J.P., Mr. Henry Lord, J.P., Mr. William Jones, Mr. Archibald Mackillop, Sir Anthony Marshall, J.P., Mr. Thomas M. Smith, and Mr. E. H. Cambell.

LIFE: Mr. W. G. Groves, J.P., and Mr. J. G. Groves, J.P.

AFFILIATED SOCIETY: Independent Methodist Literary Society, Urmston.

#### PRESENTATIONS.

The following presentations were announced:—Special number of the *Cape Times*. "Bulawayo" (illustrated); presented by Dr. W. G. Black, F.R.M.S., etc. Special Transvaal number of "Hollandia," September 2nd, 1899; presented by the Publishers. Daily Programme of the Seventh International Geographical Congress, Berlin. "Estudios Ethnograficos," by Mr. F. F. Outes, Buenos Aires; presented by the Author. A large Topographical Map of Coolgardie, and a number of papers on Western Australia; presented by the Agent-General of Western Australia. Various Maps (reprints) from the Royal Geographical Society. "Histoire Chronologique de la Nouvelle France ou Canada, par. Eng. Réveilland," 1888; presented by Mr. F. Taylor. About 70 Diplomatic and Consular Reports; presented by Mr. E. Sutton. Monograph on the Republic of Costa Rica; presented by the Philadelphia Commercial Museum. Reports of the Geodetic Survey of the United States, 1897, parts 1 and 2. United States Geological Survey Monographs, vols. xxix., xxxi., xxxv., with Atlas, many illustrations and maps; and Atlas of the Aspen District, Colorado. Annual Report of Smithsonian Institute, full of illustrations, 1896.

#### CORRESPONDENCE.

The following correspondence was submitted to the Meeting:—

Colonel George Earl Church, Rev. S. A. Steinthal, F.R.G.S., The Right Hon. The Earl Egerton of Tatton, Mr. Harry Nuttall, Messrs. Gibson and Sons, Colonel J. J. Mellor, M.P., Sir W. H. Houldsworth, Bart., M.P., Mr. W. Lewis Grant, Mr. Albert Griffiths, D.Sc., Mr. William Bowes, Mr. Elijah Helm, Mr. A. J. Herbertson, F.R.G.S., Mr. F. W. W. Howell, F.R.G.S., Mr. J. F. Atkinson, J.P., Mr. S. H. Brooks, F.I.Inst., Mr. J. Lancaster.

Mr. Alderman ISAAC BOWES addressed the members on the New Nile Dams. The address was illustrated with diagrams and a number of lantern slides lent for this address by the contractor, Mr. John Aird, M.P., and with others lent by Colonel Mellor and Mr. Mackillop.

Monsignor GADD, V.G., moved, Mr. C. H. BELLAMY seconded, and Councillor HAILWOOD supported, a resolution of hearty thanks to the Alderman for his very interesting address.

Mr. BOWES responded.

---

The 524th Meeting of the Society was held in the Library on Tuesday, November 28th, 1899, at 7-30 p.m. In the chair, Mr. S. OPPENHEIM, J.P., Honorary Treasurer.

The Minutes of the last meeting were read and approved.

The Rev. S. A. STEINTHAL, F.R.S., Chairman of the Council, addressed the Society on the Meeting at Berlin of the Seventh International Geographical Congress. The address was illustrated with reports and papers from the Congress.



Mr. Steinthal then described the City of Berlin, aided by a number of lantern views.

Very hearty thanks were given to the Chairman for his able report, and his historical and geographical description of Berlin.

---

The 525th Meeting of the Society was held in the Firth College, Sheffield, on Wednesday, December 6th, 1899, at 6-30 p.m. In the chair, the SECRETARY.

The visit to Sheffield was made upon a dismal, dreary, wet, and foggy day. It was so dark we could very dimly see across a street. This atmospheric condition lent itself to weird effects in the various workshops visited.

The members were met at the station by Dr. Griffiths, who had made all the arrangements, and who acted as guide to the party during the day.

The party was guided by Dr. Griffiths to the celebrated works of Messrs. John Brown and Company, makers of armour plates and of other heavy steel castings and rolled or hammered plates.

The dull light in the buildings gave quite a peculiar impression to the eye.

The collection of tested steel for iron-clad vessels was exhibited, and the peculiar way in which shot had lodged in the plates, in some cases almost rifling the opening made and just being held by the back of the plate, and in other ways, was of interest.

We were then shown the falling weights to test axles, a weight falling from a great height upon the axles below; and we were informed that if two axles out of a batch of one hundred showed any signs of weakness the whole hundred were condemned.

Commencing with the raw pig iron or steel, we were conducted through the various processes of manufacture until we had before us the whole side of a torpedo boat, all finished and complete.

The massive running cranes were carrying over our heads with the greatest ease huge plates of steel weighing thirty tons, and the absolute and mathematical exactness of the shaping and moulding of these huge pieces of metal to fit into their appointed places without flaw was most striking. We were glad to have a piece of the steel presented to us for our museum.

The two most weird and striking effects upon the party were produced when we stood in the midst of a gigantic workshop in semi-darkness and saw on every side huge cavernous mouths of glowing metal open, whilst in front a great glare was thrown by a thirty ton block of steel drawn out of a furnace mouth and quietly put between two great rollers which took it in hand; whilst on the floor were red hot bars, and carriers of the molten metal were on every side asking leave to pass with as much unconcern as a maid with a milk pail. And then the manager introduced us to a nearer acquaintance with three gas furnaces, each of which was dealing with thirty tons of molten metal. The three furnaces can run their metal into one mould and make one casting of ninety tons.

We did not wish to stand long before the opened furnace doors, glowing with white heat, but we all thought of a furnace we had heard of which

was made seven times hotter than was wont. We admired, and were glad to leave alive.

The steam hammers and what we must call squeezers were astonishing; axles, wheels, plates were produced from great masses of apparently shapeless glowing masses by either hammering or pressure until they assumed the proportions and shapes desired. We spent some hours with these titanic workers, and felt we had had a great lesson on the play of natural, chemical, and mechanical forces.

We very cordially thanked Messrs. Brown's manager (Mr. Thorpe), who conducted us through the works.

Dr. Griffiths then took us to dinner, and afterwards we walked to the Milton Works, and were kindly received by Mr. Atkinson. We were still in the metal world; but, if we had just seen the largest things of the kind, here we saw some of the smallest.

Again beginning with the raw steel, we followed it course by course until the raw metal had given birth to a beautifully shaped and polished knife blade, or scissors, or fork, of which we saw all the processes, and Messrs. Atkinson have placed the Society under obligation by presenting to the museum a specimen of a knife blade from the first process to that of a fine and beautiful table knife.

The putting on of the knife handles was apparently a very simple process, but it was quite evident great skill was required from the workman.

We were glad to see in relation to handles and other objects of the kind that a very useful and beautiful substance (celluloid) had been found and was extensively used in place of ivory. A sample of this material has been also presented to the museum by Messrs. Atkinson.

We then were shown white metal working, and were much interested in the apparent ease with which the workman took a flat piece of metal and, by his lathe and various tools, turned out most beautiful objects.

The artistic work was much admired, and then the party was taken to the electro works, where the mystery of putting on a good face on plain white metal was fully explained and illustrated.

By this time the party had begun to feel a little exhausted, and Dr. Griffiths led the party to the Firth College, where the principal had been good enough to provide some refreshments.

Dr. Griffiths showed us over the college, and gave information as to its origin and its new developments. The chemical, physical, and biological laboratories were examined with much interest.

On the motion of the Chairman, seconded by Mr. F. Radcliffe, and well supported, very hearty thanks were given to Messrs. Brown, to Messrs. Atkinson, to the Principal (Dr. W. M. Hicks), and to Dr. Griffiths for the great trouble he had taken in making the arrangements and for his admirable guidance and assistance. Full of knowledge and very tired, we duly arrived at the railway, and so home.

The 526th Meeting of the Society was held in the Library on Tuesday, December 12th, 1899, at 7-30 p.m. In the chair, Mr. JOHN SNADDON.

The Minutes of meetings for November 23th and December 6th were read and approved.

# NEW MEMBERS.

The election of the following members was announced:—Mr. H. J. Watson, Mr. R. S. Chrystal, Mr. Charles E. Stromeier, F.R.G.S., Mr. George Hadfield, J.P., Mr. R. H. Shelmerdine, Mr. James Barningham, Mr. A. A. Millington, Mr. Ed. H. Langdon, B.A., J.P., Mr. H. Stadelbauer, and Colonel Pilcher.

# PRESENTATIONS.

The following presentations were announced:—From the Agent-General of Western Australia: A number of papers (No. 4, "Western Australia") of statistical and other information. Geological map of the Collie Coalfield, W.A.; scale, 40 chains to 1 inch; 1898. Geological map of Northampton, W.A.; scale, 20 chains to 1 inch; 1898. From the High Commissioner for Canada: A large number of pamphlets for distribution. "Canada the Country for Farmers"; maps and views. No. 1, "Official Handbook of the Dominion of Canada." No. 2, "Official Handbook of Prince Edward's Island, Nova Scotia, etc." No. 3, "Official Handbook of Manitoba, Northwest Territories, etc." No. 4, "Official Handbook of British Columbia." "Descriptive Atlas of Western Canada," and lantern slides, 1899.

The following maps (some presentations and some of them purchased) are hung in the Library for examination by the members:—The Castle Line Map of South Africa. The *Times* Map of British South Africa, the Transvaal, and the Orange Free State. The *Daily Chronicle* Map of the Boer Republics. New Relief Map of the Transvaal. Map of South African Republic and adjoining territories, in scale 25 miles to 1 inch; I. D. W. O., No. 1,159. Map compiled, 1896, Railways, 1899, H.M. Military Intelligence Department, and Military Sketch of the Biggarsberg, and of communications in Natal, north of parallel of Ladysmith; I. D. W. O., 1,442. A small hand map, prepared by Messrs. G. Philip and Son, was sent to each member with the number of *Geography* for January.

# CORRESPONDENCE.

The following correspondence was read:—

Mr. E. W. Mellor, J.P., F.R.G.S., Mr. W. Lewis Grant, Professor W. Boyd Dawkins, F.R.S., Mr. W. R. Anthony, Mr. D. F. Howarth, Councillor David Healey, Mr. Joel Wainwright, J.P., Mr. J. B. Latham, Mr. S. H. Brooks, F.I.Inst., Mr. H. H. Smith-Carington, Mr. C. H. Bellamy, F.R.G.S., Lieutenant-Colonel E. Rogers, Mr. F. Rigg, Rev. S. A. Steinthal, F.R.G.S., Mr. H. J. Mackinder, F.R.G.S., Dr. Joseph Jones, Mr. C. T. J. Garner, Mr. F. J. Payton, Mr. H. C. Pingstone, Mrs. S. M. Doxey, Mr. J. Robertshaw.

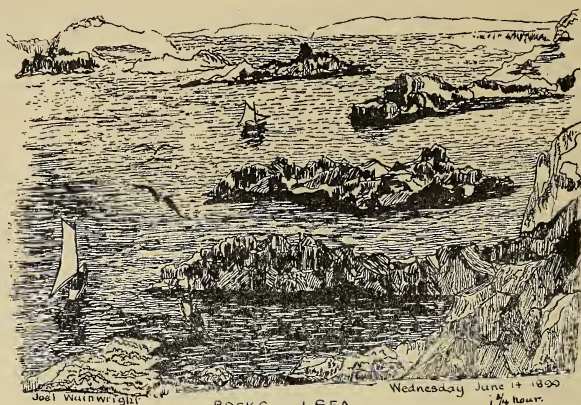
The SECRETARY addressed the Society on the Excursion of the members to Scilly. The address was illustrated with charts, lantern views made from photographs taken by Mr. Gibson, of Penzance, during the journey, and a number of specimens of plants, shells, and rocks, and shore sands collected during the journey.

Surgeon-Major BLACK, of Edinburgh, moved a hearty vote of thanks to the Secretary for his interesting address. The motion was seconded by Mr. JOEL WAINWRIGHT, J.P., and carried.

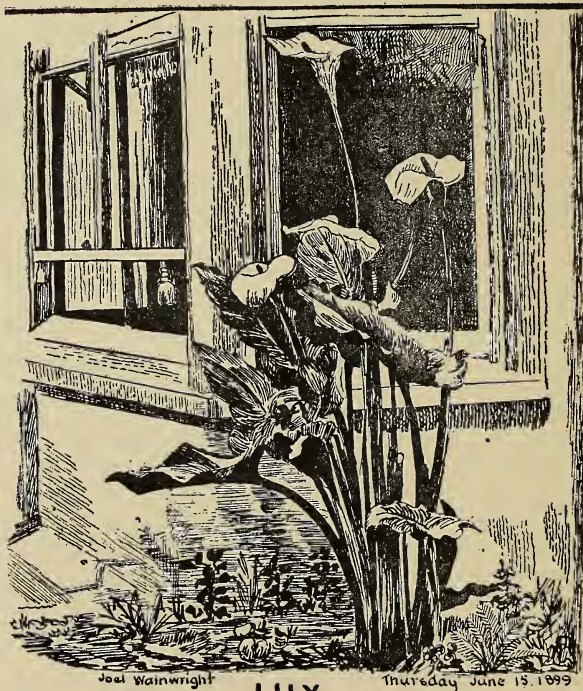
The SECRETARY responded.



The following sketches were made by Mr. Wainwright, the leader of the excursion to the Scilly Isles, and he has allowed us to reproduce them.



**ROCKS and SEA.**  
at Round Island, as sketched from the breast  
of the Light House Rock 150 ft. above sea level.



**LILY.**

The Arum Lily as growing at the door of the Tregarthen Hotel.  
It is a prolific flowering plant, in the open in the Islands.  
*The plant is common in open spaces*



A Devonshire Lane near Torquay.

This is the longest day, and I spent the long time of  $4\frac{1}{2}$  hours over the above, completing it, on the spot, at one sitting. Called on the Lewis's in Abbey Road in the evening, when we planned to go up The River Dart tomorrow.



A granite boulder - high on mountain top, near Holy Vale.  
Its weight, about 360 tons. Its contents about 4000 feet.



reading  
after the sketch of  
Afternoon tea  
June 16, 1899  
The effort of  
tea drinking had  
compelled him  
to take off coat  
and vest.

The 527th Meeting was held in the Library, on Friday, December 22nd, 1899, at 6 o'clock p.m. In the chair, the SECRETARY.

Mr. H. C. MARTIN gave a most interesting lecture to the children of the members on the astronomical position of the earth in simple language, and illustrated with moving lantern slides. The lecture gave great delight to the children, and there was a large attendance. At the close of the lecture, tickets for the children's party were distributed.

Hearty votes of thanks were given to Mr. Martin.

## CORRESPONDENCE

---

### THE DEATH OF M. PAUL CREPY, PRESIDENT OF THE LILLE GEOGRAPHICAL SOCIETY.

Lille, le 21 Décembre, 1899.

MONSIEUR SOWERBUTTS.

MONSIEUR,

J'ai la douleur de vous faire part, au nom de la Société de Géographie de Lille, de la perte cruelle et irréparable que nous avons subie dans la personne de notre cher et vénéré Président, Monsieur Paul Crepy, décédé à Lille, le 11 décembre, 1899.

Veuillez agréer, Monsieur, l'expression de ma considération distinguée.

L'un des Vice-Présidents,

ERNEST NICOLLE.

---

A letter to the same effect was received from the family of the late President.

The expression of the sympathy and condolence of the Society was forwarded both to the family and to the Lille Society.

---

M. DESTOUCHER.

Paris, le 26 Nov., 1899.

SIR,

Being entrusted with a course of lectures at the "Cours d'enseignement commercial de Paris," I intend to entertain my pupils of the work carried on by the Manchester Geographical Society. Will you kindly let me know whether I may apply to the Society for the supply of a certain number of copies of your journal, or any other document concerning commercial and colonial matters. I should be glad, too, to know the price required for the said document.

Awaiting your kind answer, I remain, sir, thankfully yours,

G. DESTOUCHER,

Professeur aux cours commerciaux, 6, Rue  
Montfaucon, Paris.



MR. J. P. THOMSON, F.R.G.S.A.

Brisbane.

November 12th, 1899.

SIR,

I must thank you very cordially, my dear Mr. Sowerbutts, for your most kindly expressed note of October 4th, which came to hand a day or two ago. I may say that a little over a year ago I could scarcely have hoped to enjoy the privilege of communicating with you again on any subject pertaining to the geography of this planet, the sphere away in the vast unknown beyond being nearer my mortal ken than anything else. But here I am, once more, to "work, for the night is coming." I was just five months off duty with an illness of the most distressing and dangerous kind, not painful, but gravely serious. The fact of the matter is that I had for many years been overworking myself. I was strong, and thought that I could stand anything. I have, however, discovered how grave a mistake it is for any one to think so, no matter how strong he may be.

For years I had neglected my own family and my own health in the interests of geographical science, and had made a slave of myself to our work here and to the good of the public and the country. I derive no benefit from this slavery, and expect no reward. But I am strong again, thanks to my naturally sound constitution. I was very deeply grieved to learn—through the medium of the most excellent prints that emanate from the Society so ably conducted by your zeal and ability, and a staff of distinguished and eminent workers, which constitute the officers and council of that body—of your own illness, some time ago. I had indeed fully intended to write at the time and offer my sympathy to you and your family, but was prevented on account of the unsatisfactory state of my own health. I was much shocked when the news of the death of Smithson reached here. His loss must be very deeply felt by the Tyneside Society. The geographical world is not so numerously represented by enthusiastic workers that it can afford to lose such men as poor Smithson.

"Rare are the good; more scarce their numbers seem,  
Than Thebes' famed gates or Nile's disparded stream."

I received a couple of numbers of the "Journal" a few days ago. These I have read with great interest, although my time for reading is so limited that I am obliged to limit what I read, after very careful selection, I watch the progress and development of the Society in Manchester with deep interest—I may say affection. I think you have acted wisely and well in deciding to institute a commercial department. This is a branch of the Society's work in which I have long taken an interest. I have advocated such an establishment here, and would greatly like to see it incorporated in the work of all geographical societies. In point of fact, I am as much interested in your work as in my own. I think you have done wonders. I never miss a chance here to enlist interest and sympathy with the zealous band of workers at 16, St. Mary's Parsonage. I always bring your "Journal" under the special notice of all our people here.

I have just had my photo\* taken for our Society here and in response to numerous requests from outside bodies. They desired to publish it some

---

\* This has been hung in the Library.

time ago, but I always put off the matter, as I was not ambitious in that way. I think I am one of your oldest members; at all events, I have been a member for many years, and I have your publications complete. In these my humble contributions appear pretty frequently; in fact, they seem to be scattered throughout the numerous volumes of the "Journal," in one of which you were good enough to greatly honour me by publishing a short account of my work. This was greatly appreciated here, and did much to cement the tie of a deep and lasting brotherhood. I think you ought to have my photo., too, and I now have great pleasure in sending you one, which I trust will be accepted by the distinguished and learned officers and members of your council, with my own sincere regards and good wishes for your happiness and welfare and the success of the Society.

Respectfully yours,  
J. P. THOMSON.

#### DEATH OF CHIEF JUSTICE C. P. DALY, PRESIDENT OF THE AMERICAN GEOGRAPHICAL SOCIETY.

New York, October 2nd, 1899.

The Council makes known, with profound sorrow, the death of the President of the Society, Ex-Chief Justice Charles P. Daly, LL.D., on the 19th of September, at the age of eighty-four years.

Levi Holbrook,  
Secretary.

HENRY PARISH,  
Chairman.

A very sympathetic vote of thanks was passed by the members and forwarded to the American Geographical Society.

#### NEW BOOK.

THE SCOTTISH JACOBITES AND THEIR SONGS AND MUSIC, WITH A SUCCINCT ACCOUNT OF THEIR BATTLES. By THOMAS NEWBIGGING. 147pp. (with index). Preface, map of Scotland, portraits, plans of battles, etc. Gay and Bird, London, 1899. Price 3s. 6d.

WE are glad to welcome another monograph from the pen of our veteran member, written with the easy charm which a perfect mastery of his subject gives him. We are all no doubt exceedingly loyal, but there is a tender chord even in the hearts of stolid Englishmen which vibrates when touched by the Jacobite story as told by Mr. Newbigging. He divides his matter into seven chapters—The Jacobite movement in Scotland. Women and the Jacobite movement. Historians of the Jacobite risings. Modern Jacobites, their songs, their music, and their battles. We have in St. Ann's churchyard a perpetual reminder of the risings, and Manchester history is full of the clash of opinion and of arms. No wonder then that this story is to us altogether so delightful. And we can enjoy it to the full as an end was put to the Jacobite dream of becoming a real fact.

## REPORTS.

---

### THE SEVENTH INTERNATIONAL GEOGRAPHICAL CONGRESS, SEPTEMBER, 1899.

Report by the Rev. S. A. STEINTHAL, F.R.G.S.

THE Council of our Society having honoured me with the appointment to represent it at the Seventh International Geographical Congress, which met this year in Berlin, it is my duty this evening to lay before you a brief report of the valuable and interesting proceedings of what, in some respects, must be regarded as the most successful of the series of Congresses. In the first place the number of ladies and gentlemen who were enrolled as members reached the unprecedented number of 1,665, and meeting, as we did, in the building erected for the Prussian Parliament, the accommodation for so large a number was ample, and the convenience of those attending the general as well as the sectional meetings of the Congress was most generously met. I think I am right in saying that only on two occasions—the opening meeting and Dr. Nansen's lecture—did we ever feel ourselves overcrowded.

To me, as coming from England, one fact impressed itself, as it has done on other occasions when I have attended such gatherings on the Continent, and that was the recognition which is given to scientific research by the governing authorities of the country. We can hardly dream that the time will ever come when the Houses of Parliament will be placed at the disposal of any gathering of scientific men, however eminent. When we met in London the Congress had as its Hon. President H.R.H. the Duke of York, and in this respect, therefore, we can claim that the claims of Geographical Science were recognised by our Royal Family as graciously as they were in Berlin, where we were welcomed by the uncle of the German Emperor, Prince Albrecht of Prussia, who delivered a very kindly message from the Emperor in a straightforward and simple speech, and added some well-chosen words of appreciation of the services which Geography renders to human progress. But then the Chancellor of the German Empire, Prince Hohenlohe, welcomed the Congress in the name of the Imperial Government, and made me wish that our Government would show as much practical interest in science as Germany has done, enumerating, as he did, the instances in which expeditions had been undertaken at its expense, and institutions founded and maintained to promote the advance of geographical knowledge and inquiry. He was followed by Dr. Studt, the Minister of Ecclesiastical Affairs and of Instruction, who could tell how the first professor of geography at any university had been the well-known Carl Ritter, who



was appointed, early in the century, to the chair in Berlin, and could add that at every Prussian University, since the year 1870, there was a geographical chair, and that geography was in each a special subject of examination for candidates aspiring to become teachers in secondary schools. We have readers in geography at Oxford and Cambridge; King's College, London, has a professor of geography, but his duties also cover mineralogy and geology; Cardiff, also has a professor of geography and geology. In Owens College the subject is also taken up, and, I trust, will be soon again placed in the care of a specialist. Victoria University is, I believe, the only English university that gives the subject any place in its examinations, and I think I may claim it as one of the results of our Society's operations that this recognition is given here. But we are far as yet from that appreciation of any scientific subject by the Government which was shown by the official welcome given to the Congress by the Prime Minister of Germany and the Minister of Public Instruction of Prussia. After the Burgomaster of Berlin had given the city's welcome, Baron Richthofen, the President, thanked all who had taken part in the preparations for the meeting, and described at some length the strides which had been made by geography in the century which is so rapidly drawing to a close. He spoke with special grace of the work of Alexander v. Humboldt, of whose connection with geographical research this was the centenary, as he began his journeys in 1799, and dwelt on the achievements in Arctic research, in oceanography, and knowledge of glaciers, besides the vast growth of our knowledge of the surface of the earth. The welcome which every speaker gave to the foreign guests was responded to by Mr. Semenoff, the President of the St. Petersburg Geographical Society, and by Sir Clements Markham, the President of the Royal Geographical Society, who reported in brief the proceedings of the Committee which had been appointed at the last Congress, and formally transferred the Presidency to his successor, Baron Richthofen. We then passed a vote of thanks to the Emperor for his welcome, which was ordered to be sent telegraphically to his Majesty, elected our Vice-President, and then adjourned. The meeting was a very brilliant one. I saw more orders and uniforms than we are wont to have shown in English meetings, and the large number of ladies—there were more than 400 entered the hall—added no little to the bright impression which the opening meeting made on all present.

There had been an informal gathering of members on the evening of the previous day, when one of the useful and pleasant benefits of these Congresses was very marked. Folks who had not met since the last Congress greeted one another, and arrangements were made to promote special scientific objects in which they were interested, and agreeable recollections of former meetings and their results talked over. The absence of some old friends whom we should not see again on earth was lamented; while kindly inquiries were made after others whom accidental conditions had hindered, and I may be allowed to mention that I had many very cordial inquiries to answer about our Secretary, who seems to be warmly remembered and appreciated in Russia, in Switzerland, and in America, as well as in Manchester.

It would be a tiresome thing for you were I to try and give you even the briefest summary of the various papers which were read before us.

No one could hear them all, as, though we met every morning in the Chamber of Deputies in a general gathering, we divided in the afternoon into sections, and more than 120 papers were read in the six days of meeting, while a good deal of time was taken up by the discussion of a long series of resolutions which received the approval of the Congress, and which prepared work for the Permanent Committee, which carries on the active life of the Congress till its next meeting. Great interest was specially shown in the plans, which Sir Clements Markham and Dr. v. Drygalskie explained, of the Antarctic expeditions which England and Germany intend to send out, and the way in which they are to co-operate. The importance of the inquiries which these voyages, it is hoped, will help to serve, was shown in M. Arctowski's report on the oceanographic and meteorological results of the Belgian Antarctic Expedition, and the interest taken in the subject accounted for the hearty reception of Professor Neilsen's (of Christiania) report of the successful landing of Borchgrevink and his companions at Cape Adare. I trust that before long we may have an opportunity of hearing more details of the English plans from Sir John Murray, the President of the Royal Geographical Society, but better known as the editor of the Challenger's scientific results. No man was more effective than he in pointing out to the Congress the important character of the investigations which properly-managed explorations in the Antarctic circle would conduct, though men with the experience of Dr. Nansen and General Greely took part in the debate which followed the papers I have just named. Oceanography was treated in very many and interesting ways by the readers of many papers, and Dr. Nansen won a most striking triumph in securing the rapt attention of the vast audience, which listened to his report on the oceanographical results of the "Fram's" journey. At the conclusion of his paper the chairman, Professor von der Steinen, paid the lecturer the well-deserved compliment of saying how different a thing it was to read the technical results of scientific research from tables of figures or to hear their development described by the powerful individuality of the man who had gained them in hard combat with the forces of nature, and had brought them home in triumph. The Prince of Monaco vividly described his investigations on the East Greenland seas, and Professor Dr. Chun eloquently told the results of the deep-sea explorations of the "Valdivia." Many other papers illustrated the important place which oceanography has secured for itself among the subjects included in the many-sided science which we call geography.

In such a gathering you can easily imagine we were favoured by the presence of many travellers, who had very interesting tales to tell of their experiences. Districts in Africa which had been unvisited were described by Count von Götzen, in narrating recent searches for the source of the Nile. Dr. Virchow spoke most ably on the archaeological discoveries which Dr. Lehman had made in Armenia. He had found in the ruined churches which mark the course of recent persecutions, but which, I noticed, were always spoken of as rebellions, old frescoes, and, still more valuable, cuneiform inscriptions, especially numerous on stones found in the foundations laid bare. Dr. de Claparède (of Geneva) gave a very graphic account of his recent investigations at the first and second cataracts of the Nile, and described in another paper the great undertaking of erecting the bar above Assouan, and the economic

results to be expected from it. You had the advantage of hearing Mr. Alderman Bowes' paper on this subject last Tuesday, and can judge how interesting it must have been to hear a gentleman who had visited the works tell his experiences of this gigantic undertaking. Professor von der Steinen laid before the Congress a report of the first year's operations of the Jesup North Pacific Expedition, which is investigating the question of the development of civilisation in America, and the connection of the aborigines of that continent with the races of Asia. Mr. Jesup, the President of the New York Natural History Museum, has generously provided the means; and the valuable material which has been gathered in America, in the territories extending from North Alaska to the Columbia River, and in Asia as far as South Siberia, is being arranged in the museum at New York, and will soon be open to the public. Most valuable ethnological results have been already attained, and evidence of migration on the Pacific coast is abundant. A great number of dialects was found—as many as 20 varieties of speech were enumerated among the Selisch tribes—while a community of customs and traditions show that the variations must be of comparatively late origin. The curious fact was dwelt upon that the ancient customs of the Esquimos of Alaska have much closer relations to the Esquimos of the East than their modern usages, which are more akin to those of the Red Indians. As the expedition is still continuing its inquiries, there is good reason to anticipate very valuable results in archæology and ethnology.

You can easily imagine that in a Congress where the most distinguished experts were collected the more specially mathematical geographical inquiries were not negeted. Cartography was the subject of several contributions; amongst these perhaps the most interesting paper was one in which Professor Penck once again dealt with the production of a map of the world on the scale of one to a million, each sheet to be bounded by meridians of longitude and degrees of latitude. An interesting discussion took place, in which it was pleasant to see a townsman of ours, Mr. Stromeier, take part, and after some objections of Professor Wagner, of Göttingen, had been met, a unanimous recommendation was made for the consideration of the concluding general meeting. It is not possible to do justice to the variety of topics brought forward at the numerous meetings, and I must draw this somewhat wearisome catalogue to a conclusion. The results of the Congress were formulated in 17 resolutions, which, I trust, will appear in full in our Journal. They require careful study, and it would only make this paper still more dull if I were to quote them in detail. But before I pass on to show you some slides which will give you some acquaintance with the city in which our meeting was held, I must mention, with grateful appreciation, the hospitality which was so generously offered to *all* the members of the Congress. I must specially say all, for at Berlin no arrangements had been made, as I have noticed at previous gatherings, to let the visitors from other countries enjoy special privileges. It was a cosmopolitan meeting, and all nations were treated on equal terms; but these terms were very generous. May I deal with the lasting obligations first? Every member of the Congress, in addition to the business programmes and the abstracts of papers, received a mass of interesting and valuable literary productions, which will take no



little time to read, but which will be of permanent value. I am sure we received in maps and books more than we paid as our member's subscription. Specimens of these gifts are on the table. In addition to this consideration of our special scientific interests our friends in Berlin did not forget that we have social interests as well. To a performance at the Royal Opera House of one of Wagner's masterpieces a large number of our members were invited, the number being limited by the fact that the parts of the house set apart could not accommodate all the members of the Congress. Prince v. Hohenlohe most generously welcomed as many of us as his residence would hold, and provided us with every comfort and luxury of which we could dream. The Chancellor received the members very courteously, and conversed in a most pleasant way with those who were presented to him, in a manner which showed that he really did wish to make our visit to Berlin an agreeable as well as a useful one. The Town Council of Berlin engaged the large rooms at the Zoological Gardens, and gave a sumptuous dinner to the members on the Saturday evening. There must certainly have been more than 1,500 ladies and gentlemen who sat down to dinner, and I cannot understand how the caterers contrived, with such a number of guests, to supply so excellent a meal. Every dish was as hot as if served in a private dining-room, and every one's wants were attended to as promptly as if he were at home. Speeches were, of course, made—in continental fashion—between the various courses, and, no doubt, they were most eloquent and appropriate, but in so large a hall few voices can carry, and the only orator I heard was Nansen, whose speech was very characteristic, deprecating the modern fashion of some folks, trying to make a record by adding another degree of latitude to their voyage instead of attending to the special work of the explorer by adding to the mass of scientific knowledge by exact and persevering and painstaking observation. I could not help thinking how noble an instance he had given of how it is possible to achieve both objects. The room we were gathered in was most tastefully decorated; palms and other exotic plants were everywhere around, and every table was adorned with wreaths of flowers from which electric lamps of varied colours threw a pleasant light. Every one seemed pleased, and I am sure the Town Council of Berlin and its public-spirited burgomaster well deserve the thanks which I have no doubt Baron von Richthofen and Sir Clements Markham, to whom the duty of proposing the toast in honour of the city was entrusted, most eloquently paid in the name of its guests. The Baron von Richthofen, as President of the Berlin Geographical Society, entertained the Congress on the evening of Monday, 2nd October, in the Hotel Kaiserhof. The hotel has grand halls, and by 9 o'clock they were well filled. As usual, the Chancellor, Prince von Hohenlohe, with several other members of the Government, was present, and all the leading members of the Congress attended. A gipsy band played, and for an hour the guests enjoyed themselves, chatting over the varied events of the Congress, till at ten o'clock a most vigorous and successful assault was made upon the supper tables, which were so well supplied that, though every one was satisfied, they seemed to have inexhaustible resources in store. One of the Berlin papers remarked in its next issue what a charm there must be in our pet science, for the bitterest political opponents seemed to

become friends under its benign influence and to enjoy one another's society. When we old fogies retired we left the younger members engaged in the unscientific pleasure of a dance, for which they seemed to have as much enthusiasm as had been displayed in any of the debates of the Congress. I cannot report the success which crowned the numerous excursions which were so liberally planned for the members, but I heard that they were very instructive, and at the same time most enjoyable, though some of them were not favoured by good weather; nor can I speak from personal knowledge of the experiments which were shown of methods of meteorological research by means of kites and captive balloons; nor of the interesting visit which was paid to the Observatory, where the director explained the special character of his great telescope, and gave practical illustrations of its powers. It was characteristic to find on the invitation sent out by the authorities of the Observatory that they had arranged for the refreshment of their guests, in the intervals between astronomical investigations, with one of the best known breweries of Berlin. But I must end this imperfect narrative and let the lights go out, so that you may see something of the noble city in which as your representative I spent such pleasant days.

Mr. Steinthal then gave a brief description of the leading buildings and topographical features of Berlin.

---

#### THE GEOGRAPHICAL ASSOCIATION.

---

DEAR MR. SOWERBUTTS,—I enclose you the annual report of the Geographical Association, and shall be much obliged if you will notice it in the next number of the *Journal*. You will see that I have succeeded in having the Association opened to all teachers of Geography, and you will notice that the material advantages that can be gained through subscribing to the Association, much more than pay for the small subscription charged. I also enclose several copies of leaflet, setting forth the aims and methods of the Association, and shall be obliged if you will let a copy lie on the Library table, and hand others to any interested. As the Association extends we hope to be able to give still greater advantages to our members.—Yours very truly,

A. J. HERBERTSON.

25, Norham Road, Oxford, March 9th, 1900.

#### OFFICERS AND COMMITTEE FOR 1900.

PRESIDENT: Douglas W. Freshfield, late Hon. Sec. of the Royal Geographical Society.

HON. SECRETARY: Andrew J. Herbertson, Assistant to the Reader in Geography at Oxford; 25, Norham Road, Oxford.

Founded at a meeting of Public School masters, held at Oxford in May, 1893, the Association is now open to all teachers of Geography and other persons interested in the teaching of Geography.

AIMS AND METHODS OF THE GEOGRAPHICAL ASSOCIATION.

The aim of the Association is to improve the teaching of Geography by spreading the knowledge of all such methods as call out the pupil's intelligence and reasoning powers and make Geography a real educational discipline, instead of merely loading the memory with names and isolated facts.

Among means for furthering this aim, the following have been adopted with success:—

1. A Memorial to Boards of Public Examiners has already, in many cases, led to a marked improvement in the character of the questions set.
2. Lectures and Meetings for discussion may be arranged at Schools or other local centres.
3. Members are invited to send to the Hon. Secretary papers describing their own methods of teaching Geography, and the views that experience has led them to adopt; also papers dealing with special aspects of the subject, written from the teacher's point of view.
4. The American "Journal of School Geography" (edited by Professor R. E. Dodge, of the Teachers' College, New York City) has been adopted as a medium for the discussion of methods and the diffusion of information useful to teachers.
5. Hire of Lantern Slides. The Association possesses a large collection of lantern slides (maps, diagrams, and views of scenery), specially prepared by Mr. B. B. Dickinson for the use of members.

And other objects are set forth in full in the Association's circulars.

ANNUAL REPORT FOR 1899.

The Association now numbers 105 members, and is represented in 62 Schools and Colleges.

In the course of the past year six members have retired and thirteen have joined the Association.

With the close of this year Mr. Dickinson retires from the post of Hon. Secretary, which he has held since the foundation of the Geographical Association in 1893, and the occasion seems a proper one for putting on record the circumstances under which the Association came into being, as well as for reviewing what it may claim to have accomplished up to the present time.

Seven years ago Mr. Dickinson addressed a letter to friends engaged, as he was, in teaching Geography in Public Schools. He pointed out the great value of the Optical Lantern in Geographical teaching, and drew attention to the difficulty of obtaining suitable slides, since, of the many thousands in the dealers' lists, but few were well adapted for teaching purposes, while all were costly. At the same time he explained that the process of making slides was a simple one, and could easily be learnt. He therefore invited a dozen friends to co-operate with him in producing slides for use in their schools. The Association he contemplated was a private one; each member was to undertake a section of the British Empire in the first instance, and the sets of slides were to be used in turn in the schools that took part in the work.

This modest programme was considerably enlarged at a meeting held in Oxford, in May, 1893.



The "Journal of School Geography" is gradually becoming more widely known—we have lately received a letter of inquiry from Melbourne regarding it—and is taken in regularly by nearly half our members. But the Associate Editor for Great Britain, Dr. A. J. Herbertson, still finds it difficult to secure notes and articles from contributors on this side of the ocean. When, therefore, teachers in this country complain that the journal is too American in character, they may fairly be reminded that it is in their power to provide the remedy.

And if in the past year the Association has had fewer opportunities of acting in its corporate capacity, yet we gladly note that many individual members have done admirable Geographical work; the President in the field of actual exploration on the slopes of Kanchanjanga and Mr. Mackinder on the summit of Kenya. To Dr. Mill we owe the "International Geography," which has been described as "the only adequate exposition in English of the principles of the New Geography and their application to the facts that are embraced in the subject." Dr. Herbertson's share in Bartholomew's great "Physical Atlas" is well known, and Mr. Chisholm has given us the first volume of Europe in the new issue of Stanford's "Compendium of Geography and Travel," while the "Times" is spreading the knowledge of his unrivalled "Gazetteer" all over the world. Among books directly bearing on Geographical teaching may be mentioned "Man and his Work" and the "Commercial Geography of the British Isles," both by Dr. Herbertson. Moreover, the Oxford School of Geography, foreshadowed in our President's address twelve months ago, is now an accomplished fact, and all the teaching staff are either already members or have expressed their intention to become members. And at Cambridge the new Syllabus of Physical Geography for the Local Examinations recognises the importance of encouraging the study of practical Geography and cultivating the faculties of observation and reasoning. In conclusion, for the first time in its history the Association numbers more than 100 members.

---

#### CONFERENCE OF DELEGATES OF BRITISH GEOGRAPHICAL SOCIETIES.

On June 6th, 1899, a Conference of Delegates of the Geographical Societies of the United Kingdom was held at the House of the Royal Geographical Society.

Present:—

Representing the Royal Geographical Society: Sir Clements Markham, Sir T. H. Holdich, Hon. G. C. Brødrick, and Major L. Darwin.

Representing the Scottish Geographical Society: Professor Butcher.

Representing the Tyneside Geographical Society: The Duke of Northumberland, Professor Philipson, and Mr. Herbert Shaw.

Representing the Manchester Geographical Society: Rev. S. A. Steinthal and Mr. Eli Sowerbutts.

Representing the Liverpool Geographical Society: Mr. James Irvine and Captain Dubois Phillips.

Representing the Southampton Geographical Society, Mr. T. G. Rooper and Mr. W. H. Rogers.

On the motion of the Duke of Northumberland, seconded by Mr. Steinthal, Sir Clements Markham, P.R.G.S., was unanimously voted to the chair.

Mr. Keltie was requested to act as Secretary.

Captain Dubois Phillips presented apologies for absence for Professor Gonner and Mr. A. L. Smith, delegates of the Liverpool Society.

The Chairman, Sir Clements Markham, read the following address:—

“It has always been the desire of the Council of the Royal Geographical Society to work not only harmoniously but usefully with the other sister Societies throughout the kingdom. I found last year that a feeling existed among the members of some of the sister Societies in favour of a conference, by means of which ideas might be exchanged and possibly some joint action, for certain objects, agreed upon.

“In consequence of representations I received, especially from the late Secretary of the Tyneside Geographical Society, whose loss we lament, I thought it would be desirable if delegates from the Societies could meet together, and through a mutual exchange of views come to a conclusion with regard to the best way of giving effect to the wishes which, I assume, we all entertain. This, then, is the reason for our meeting together to-day.

“Before inviting the delegates to express their views and to submit proposals, it will be expected that I should indicate some of the occasions and some of the subjects respecting which joint action might possibly be useful in furthering the interests we all have at heart.

“There are of course occasions when all bodies which are formed with the advancement of geography as their object are bound to unite as one man. Such, for example, is the present effort which is being made to collect sufficient funds for the equipment and despatch of an Antarctic Expedition on such a scale as that no shame will be brought on our country. All the Societies have the means of assisting by an active propaganda, by appeals to the public spirit and patriotism of wealthy people within their influence or in their neighbourhood, by lectures on the subject, and the diffusion of a knowledge of it, and in other ways. Such occasions are not of annual occurrence, but surely when they do occur every British geographer should work heartily in such a cause.

“In the ordinary labours of the Societies there are also, no doubt, times and occasions when deliberation, and perhaps combined action, among their representatives will do much to advance the interests of geographical science in this country.

“Help and advice can be given in arranging for lectures or readers of papers, to complete the series for the session of the provincial Societies.

“Conferences might be useful to discuss questions relating to Geographical education, and to the measures most suitable for its advancement in different parts of the kingdom, with reference to the circumstances and habits of the people.

"There are several questions relating to the cheaper and easier supply of Ordnance survey maps which might find their solution through the combined action of the Societies.

"In the event of the proposed measure for the preparation of memoirs to accompany the Ordnance survey maps being further advanced, I cannot doubt that most valuable assistance would be derived from conferences of delegates sent by the different Societies.

"The efforts of the Geographical Association to supply slides of maps for educational purposes could be immensely assisted by suggestions and other forms of co-operation.

"Commercial geography is a branch of our work which calls for much closer attention than it now receives, and which would undoubtedly be made far more practically useful and important if its requirements were diligently studied, and the best means of securing them discussed and decided upon by conferences of delegates from the Societies.

"I have enumerated a few ways that have occurred to me in which our conferences might be serviceable in the advancement of the interests of our science. No doubt several now present will be disposed to criticise what I have said, or to enlarge upon the points I have raised, and I now invite discussion."

After some discussion the following resolution, suggested by the **Chairman**, was unanimously adopted:—

"That this meeting of delegates from the Councils of the Geographical Societies is of opinion that there are several branches of their work which would be advanced by occasional conferences."

On the motion of Mr. Brodrick, seconded by Mr. Sowerbutts, the following further resolution was adopted:—

"That a conference be held for this purpose at the office of the R.G.S. on the day following the Annual Meeting of the R.G.S., 1900."

It was also decided that such conference should consist of not more than three delegates from each Society.

It was unanimously voted that the Chairman's address be printed and sent to the Councils of the various Societies, with a letter inquiring whether in their opinion these meetings should be annual or occasional, or both; asking for their views as to occasionally holding meetings of the conference in the country, and inviting them to suggest subjects for the consideration of the conferences.

A vote of thanks to the Chairman was moved by the Duke of Northumberland, seconded by Mr. Steinthal, and passed unanimously.

---

#### REPORT OF THE SOCIETY'S DELEGATE TO THE MEETING OF THE BRITISH ASSOCIATION AT DOVER, SEPT., 1899.

THE meeting was not largely attended, and the amount received by the Association was the smallest sum received since the Ipswich meeting.

The President for the year was Professor Sir Michael Foster, K.C.B.,



who gave the presidential address, being a comparison of the intellectual and scientific conditions in 1799 and 1899.

Section E was presided over by Sir John Murray, K.C.B., F.R.S., whose address was upon oceanography and the proposed Antarctic expedition.

There were two evening lectures, one by Professor C. Richet (in French), upon "*La Vibration Nerveuse*," and one by Professor J. Fleming, F.R.S., upon "*The Centenary of the Electric Current*." The latter lecture was illustrated with a large number of brilliant experiments, and with Marconi's instruments for wireless telegraphy.

There was no lecture to the working classes at this meeting.

Section E was unfortunate; the meeting room was a long way from the reception room, and to the general public the papers read were not of a popular character. Six were more or less technical papers on Antarctic research, and five or six dealt with oceanography. The committee room was small and inconvenient, and the large room (apparently the dancing room of a public-house) was uninviting. The result was that Section E did not shine in attendance. The most interesting papers were perhaps "*Travels in East Bokhara*," by Mr. Rickmers; "*Journey in West Oaxaca, Mexico*," by Mr. O. H. Howarth; "*Visit to the Karch-Chal Mountains, Trans-Caucasia*," by Mr. W. R. Rickmers; and Captain Welby's address on "*A Journey to Abyssinia*."

In some of the other sections there were most valuable papers read, and the address of the President of Section G was very interesting.

The presidential addresses will all be reprinted in the Report.

Your representative attended two meetings of the delegates, but nothing occurred to those meetings of any value to the societies. Addresses were given at both meetings which took up time that could be badly spared. The addresses were very good on their subjects, but many delegates objected to the time being taken up in this manner, and vigorously expressed themselves to that effect. As a result the matter was referred to the committee, and societies were to be requested to forward suggestions to the secretary.

This Society responded, and the result is that the following circular has been issued by the committee of the Association:—

#### CORRESPONDING SOCIETIES.

The question of the relations existing between the British Association and Corresponding Societies having been frequently raised during meetings of the Conference of Delegates, the Corresponding Societies Committee beg to submit the following statement as likely to be of use both to the Societies and their Delegates:—

In 1884 the General Committee of the British Association passed the following Rules respecting Corresponding Societies of the British Association:—

1. Any Society is eligible to be placed on the list of Corresponding Societies of the Association which undertakes local scientific investigations, and publishes notices of the results.
2. Application may be made by any Society to be placed on the list of Corresponding Societies. Applications must be addressed to the Secretary on or before the 1st of June preceding the Annual Meeting

at which it is intended they should be considered, and must be accompanied by specimens of the publications of the results of the local scientific investigations recently undertaken by the Society.

3. A Corresponding Societies Committee shall be annually nominated by the Council and appointed by the General Committee for the purpose of considering these applications, as well as for that of keeping themselves generally informed of the annual work of the Corresponding Societies, and superintending the preparation of a list of the papers published by them. This Committee shall make an annual report to the General Committee, and shall suggest such additions or changes in the list of Corresponding Societies as they may think desirable.
4. Every Corresponding Society shall return each year, on or before the 1st of June, to the Secretary of the Association, a schedule, properly filled up, which will be issued by the Secretary of the Association, and which will contain a request for such particulars with regard to the Society as may be required for the information of the Corresponding Societies Committee.
5. There shall be inserted in the Annual Report of the Association a list, in abbreviated form, of the papers published by the Corresponding Societies during the past twelve months which contain the results of the local scientific work conducted by them; those papers only being included which refer to subjects coming under the cognisance of one or other of the various Sections of the Association.
6. A Corresponding Society shall have the right to nominate any one of its members, who is also a member of the Association, as its delegate to the Annual Meeting of the Association, who shall be for the time a member of the General Committee.
7. The Conference of Delegates of Corresponding Societies is empowered to send recommendations to the Committee of Recommendations for their consideration and for report to the General Committee.
8. The Delegates of the various Corresponding Societies shall constitute a Conference, of which the Chairman, Vice-Chairman, and Secretaries shall be annually nominated by the Council, and appointed by the General Committee, and of which the members of the Corresponding Societies Committee shall be *ex-officio* members.
9. The Conference of Delegates shall be summoned by the Secretaries to hold one or more meetings during each Annual Meeting of the Association, and shall be empowered to invite any member or associate to take part in the meetings.
10. The Secretaries of each Section shall be instructed to transmit to the Secretaries of the Conference of Delegates copies of any recommendations forwarded by the Presidents of Sections to the Committee of Recommendations bearing upon matters in which the co-operation of Corresponding Secretaries is desired; and the Secretaries of the Conference of Delegates shall invite the authors of these recommendations to attend the meetings of the Conference and give verbal explanations of their objects and of the precise way in which they would desire to have them carried into effect.

11. It will be the duty of the Delegates to make themselves familiar with the purport of the several recommendations brought before the Conference, in order that they and others who may take part in the meetings may be able to bring those recommendations clearly and favourably before their respective Societies. The Conference may also discuss propositions bearing on the promotion of more systematic observation and plans of operation, and of greater uniformity in the mode of publishing results.

From these regulations it will be seen that any Scientific Society which undertakes local work and publishes notices of the results may apply to be admitted a Corresponding Society of the Association, and if its position and publications come up to a satisfactory standard it is placed upon the list. In order to judge whether the Society is worthy of the continuance of recognition, as well as to tabulate its work, the Association requires that certain returns regarding the Society, and a copy of all publications it has made during the year, shall be sent to the Association on or before the 1st of June each year.

Such are the only requirements of the Association from a Society for its recognition. Let us now consider the advantages to the Societies and their members of affiliation to the British Association.

The admission of a Society to the list of Corresponding Societies is an acknowledgment by the Association of the position of the Society and of the scientific work it is doing.

Every year a list is prepared of all the more important papers contained in the publications of the Corresponding Societies sent to the Association during the previous twelve months. In this list the various papers are classified according to the Sections of the Association under which they come, and the names of their authors, the title of the Society, and the volume, page, and date of the publication in which they appear are given. This list is printed in the Annual Report of the Association, and a copy is presented to each Corresponding Society on the list for the year. The work done by each Society during the year is in this way not only brought before the notice of the other Corresponding Societies and of members of the Association, but also of workers in science throughout the world, since there are few National and Scientific Libraries in which the Reports of the British Association are not to be found. The catalogue of papers which the lists contain has now grown to be so important a record of the scientific work done in this country that it cannot be disregarded by authors who desire to make themselves acquainted with the literature of their subject. There is also a growing desire to consult the papers themselves. To meet this demand, and to place the papers as far as possible within the reach of scientific investigators who wish to consult works in the scientific libraries of the Metropolis, the publications of the different Corresponding Societies which the Association receives are bound up separately and preserved for reference in the Offices of the Association in Burlington House, and may be consulted by any scientific worker. Individual Corresponding Societies would be quite unable to bring before the scientific public the work of their members in the widely-extended manner in which it is made accessible by the British Association.

Each Corresponding Society has the right to nominate a delegate to the Annual Meetings of the Association, who shall represent it at the



Conference of Delegates. The position accorded to delegates by the Association is one of prominence, as they are for the time *ex officio* members of the General Committee, which is the governing body of the Association. Through its delegate, therefore, each Society has a voice in the deliberations of that body. It has also been the custom to place delegates upon the Committees of the different Sections, according to the particular branches of science with which they have individually identified themselves. This gives them opportunities of bringing forward for the consideration of the Sectional Committees subjects which, in their opinion, or in that of the Societies they represent, should be taken up by the Association as of importance for the advancement of Science, and it brings them into touch with the working of the Sections.

As a delegate has important duties to fulfil at the Conference of Delegates, it is of the greatest importance to the Societies that each should send the best representative it possibly can to the Association. At the Conference of Delegates matters relating to the Corresponding Societies and the work which they can most efficiently undertake are discussed, also the promotion of more systematic observations and plans of operation, and of greater uniformity in the mode of publishing results. The subjects for investigation during the year by Committees of the Association in which the co-operation of the Corresponding Societies is desired are announced, and representatives are sent from these Committees to the Conference to give verbal explanations to the delegates of the nature and object of the investigations, and to indicate the precise way in which they should be carried out by the Societies. It is the duty of the delegates to make full notes of what is done at the Conferences, and of the explanations given regarding the subjects of investigation for the year, so that they may be able to place a full and lucid report on these subjects, and on other matters discussed at the Conference, before their respective Societies, on their return home. At the earliest possible date the report of the delegate should be brought before the Society, and committees of its members formed to arrange and carry out the local investigations and other work proposed for the Societies at the Conference of Delegates.

The Corresponding Societies Committee will be glad to receive suggestions from the Corresponding Societies with reference to subjects of general interest to local Societies which it is considered might be advantageously discussed at the Conference of Delegates at Bradford, on September 6th and 11th, 1900. Suggestions must be sent to the British Association, Burlington House, Piccadilly, London, W., before June 1st.

The delegates strongly urged the need of a meeting room for them, where they could meet to be made known to each other, and where informal conferences could be held on the particular division of work in which they were especially engaged.

The work of the following committees commends itself to our members, and Councils will be glad if any of them are able to assist:—

CHAIRMEN AND SECRETARIES APPOINTED BY THE GENERAL COMMITTEE  
AT THE DOVER MEETING IN SEPTEMBER, 1899.

Seismological Observations.—Chairman: Professor J. W. Judd.  
Secretary: Professor J. Milne.

To Investigate the Erratic Blocks of the British Isles, and to take

measures for their preservation.—Chairman: Professor E. Hull. Secretary: Professor P. F. Kendall.

The Collection, Preservation, and Systematic Registration of Photographs of Geological Interest.—Chairman: Professor J. Geikie. Secretary: Professor W. W. Watts.

To Examine the Conditions under which Remains of the Irish Elk are found in the Isle of Man.—Chairman: Professor W. Boyd Dawkins. Secretary: Mr. P. M. C. Kermode.

To Further Investigate the Fauna and Flora of the Pleistocene Beds in Canada.—Chairman: Sir J. W. Dawson. Secretary: Professor A. P. Coleman.

The Excavation of the Ossiferous Caves at Uphill, near Weston-super-Mare.—Chairman: Professor C. Lloyd Morgan, Secretary: Mr. H. Bolton.

The Movements of Underground Waters of Craven.—Chairman: Professor W. W. Watts. Secretary: Captain A. R. Dwerryhouse.

To Explore Irish Caves.—Chairman: Dr. R. F. Scharff. Secretary: Mr. R. Lloyd Praeger.

To Work out the details of the Observations on the Migration of Birds at Lighthouses and Lightships, 1880-87.—Chairman: Professor A. Newton. Secretary: Rev. E. P. Knubley.

Future Dealings in Raw Produce.—Chairman: Mr. L. L. Price. Secretary: Professor A. W. Flux.

State Monopolies in other Countries.—Chairman: Professor H. Sidgwick. Secretary: Mr. H. Higgs.

To Consider whether the British Association form of Thread for Small Screws should be modified, and, if so, in what direction.—Chairman: Sir W. H. Preece. Secretary: Mr. W. A. Price.

To Co-operate with the Silchester Excavation Fund Committee in their Explorations.—Chairman: Mr. A. J. Evans. Secretary: Mr. John L. Myres.

To Conduct Explorations with the Object of Ascertaining the Age of Stone Circles.—Chairman: Dr. J. G. Garson. Secretary: Mr. H. Balfour.

The Collection, Preservation, and Systematic Registration of Photographs of Anthropological Interest.—Chairman: Mr. C. H. Read. Secretary: Mr. J. L. Myres.

To Co-operate with the Committee appointed by the International Congress of Hygiene and Demography in the Investigation of the Mental and Physical Condition of Children.—Chairman: Mr. E. W. Brabrook. Secretary: Dr. Francis Warner.

Experimental Investigation of Assimilation in Plants.—Chairman: Mr. F. Darwin. Secretary: Professor J. R. Green.

Fertilisation in Phæophyceæ.—Chairman: Professor J. B. Farmer. Secretary: Professor R. W. Phillips.

Corresponding Societies Committee for the Preparation of their Report.—Chairman: Professor R. Meldola. Secretary: Mr. T. V. Holmes.

To Confer with British and Foreign Societies publishing Mathematical and Physical Papers as to the desirability of securing Uniformity in the size of the pages of their Transactions and Proceedings.—Chairman: Professor S. P. Thompson. Secretary: Mr. J. Swinburne.

250 *The Journal of the Manchester Geographical Society.*

The Rate of Increase of Underground Temperature downwards in various Localities of Dry Land and under Water.—Chairman: Professor J. D. Everett. Secretary: Professor J. D. Everett.

The Application of Photography to the Elucidation of Meteorological Phenomena.—Chairman: Mr. G. J. Symons. Secretary: Mr. A. W. Clayden.

The Teaching of Natural Science in Elementary Schools.—Chairman: Dr. J. H. Gladstone. Secretary: Professor H. E. Armstrong.

The Promotion of Agriculture: To Report on the Means by which in various Countries Agriculture is Advanced by Research, by Special Educational Institutions, and by the Dissemination of Information and Advice among Agriculturists.—Chairman: Sir John Evans. Secretary: Professor H. E. Armstrong.

To Establish a Uniform System of Recording the Results of the Chemical and Bacterial Examination of Water and Sewage.—Chairman: Professor W. Ramsey. Secretary: Dr. S. Rideal.

To Consider the Best Methods for the Registration of all Type Specimens of Fossils in the British Isles, and to Report on the same.—Chairman: Dr. H. Woodward. Secretary: Mr. A. Smith Woodward.

To Study Life-zones in the British Carboniferous Rocks.—Chairman: Mr. J. E. Marr. Secretary: Dr. Wheelton Hind.

To Promote the Systematic Collection of Photographic and other Records of Pedigree Stock.—Chairman: Mr. Francis Galton. Secretary: Professor W. F. R. Weldon.

The Present State of Anthropological Teaching in the United Kingdom and elsewhere.—Chairman: Professor E. B. Tylor. Secretary: Mr. H. Ling Roth.

There were a number of excursions, but by some accident the arrangements were not satisfactory.

Perhaps the meeting with the French delegates at Dover and the visit of the British delegates to Boulogne was the most striking incident of the meeting.

The illumination of the whole front of Dover Bay, aided by the searchlights from Her Majesty's ships in the harbour and the military tattoos, gave the greatest pleasure.

Dover must always be a most interesting place, and the paper giving a description of the new harbour works was very well received.

But in the height of the Dover season it was quite a mistake to invite a large number of people to go there to add to the pressure.

Your delegate, in a sort of Mark Tapley way, enjoyed himself, and returned with many geological, conchological, and botanical specimens, which he had the pleasure to exhibit at a meeting of the Society.



## LIST OF MEMBERS,

December 31st, 1899.

Note.—H signifies Honorary, C—Corresponding, L—Life, A—Associate, \* Affiliated Societies. All others are Ordinary Members.

- Adam, Sir Frank Forbes, C.I.E.  
 Ainsworth, John (Machakos, Ibea).  
 Aked, J. H.  
 Albrow, H. J.  
 Aldred, Wm., F.C.A.  
 Alexander, Bernard  
 Alexander, W. T.  
 Armistead, Richard  
 Armitage, Sam.  
 Armitage, Alderman, V. K., M.A., J.P.  
 Armstrong, F.  
 Arning, Charles E.  
 Arnold, W. A.  
 Ascoli, E.  
 Ashworth, Francis  
 Aspden, R. H.  
 Atkinson, Thos.  
 Baddeley, John, J.P.  
 Baerlein, S., Consul for Norway and Sweden  
 Bailey, Alderman Sir W. H., J.P.  
 Balfour, The Right Hon. A. J., M.P.  
 Ballantine, Major R. F.  
 Balmer, A. W.  
 Balmer, J. E., F.R.G.S.  
 \* Balshaw's School, The Governors of  
 Barclay R., J.P.  
 Bardsley, G. W.  
 Barker, James  
 Barker, Reuben C.  
 Barlow, John R., J.P.  
 Barningham, James  
 Barningham, Thomas  
 Baronian, Z. S. Iplicjian  
 Barrington, Joseph  
 Bates, Alderman Ralph, J.P.  
 A Batho, Thomas  
 Bax, Alderman W. T.  
 Beer, Walter  
 Behrens, Charles  
 Behrens, Edward  
 Behrens, Lt.-Col. E. A., V.D.  
 Behrens, Gustav, J.P.  
 Behrens, Oliver P.  
 Beith, Gilbert  
 H Belgians, His Majesty the King of the, K.G.  
 A Belisha, B. I.  
 Bell, Joseph  
 Bellamy, C. H., F.R.G.S.  
 A Bellamy, R. C.  
 Bennie, Andrew  
 Benton, John  
 Berlinger, J. C.  
 Berry, Harold  
 Berry, Councillor Joseph  
 A Bessant, W. S.  
 A Bickerton, Richard  
 Black, Surgeon-Major W. G., F.R.C.S.E.  
 Blake, George Ingle  
 A Blake, Henry Neville  
 Blake, John Charles, F.R.G.S., F.I.Inst.  
 Blanchoud, Mdle.  
 A Bleloch, W.  
 Bles, A. J. S.  
 A Bluhm, Q. M.  
 L Boddington, Henry, J.P.  
 Bodington, Professor N., Litt.D., Vice-Chancellor of Victoria University  
 c Bodio, Professor Luigi, Rome.  
 Bolton, H. Hargreaves  
 H Bonaparte, Prince Roland, Paris  
 Booth, James, J.P.  
 A Booth, William  
 Booth, W. G., L.R.C.P.S.  
 A Bosworth, George R.  
 A Bottomley, Wm.  
 Bowes, George T.  
 Bowes, Alderman Isaac  
 A Bowker, A. W.  
 Braddon, Councillor C. H., M.D., J.P.  
 Bradley, N., J.P.  
 Bradshaw, H. G.  
 Bradshaw, Wm.  
 Brammer, G. F.  
 Bramwell, Samuel  
 A Bramwell, Thomas  
 Brettauer, L.  
 c Brice, A. Montefiore  
 Bridge, Alfred  
 Brier, Charles  
 Brierley, R. E.  
 Briggs, Herbert  
 L Brooks, S. H., F.I.Inst.  
 Broome, Joseph, J.P.  
 c Brower, Hon. J. V., St. Paul, Minn., U.S.A.  
 Brownrigg, W. F.  
 Brown, R. Hope, Bolton  
 c Bryce, J. Annan  
 Bubier, Louis R.  
 A Buckley, B., J.P.  
 Buckley, W. H., J.P.  
 Burgon, Anthony  
 \* Burnley Literary and Scientific Club  
 L Burton, Frederic  
 Butter, F. A.

A Buxton, Travers, M.A., British and  
Foreign Anti-Slavery Society  
Bythell, J. K., J.P.

A Cadman, Wm.

A Caldwell, Wm.

Calvert, D. R.

Cambell, E. H.

Campion, G. G.

A Cardwell, J. J.

\* Carlile Institute, Meltham

Carington, H. H. Smith

Casartelli, Very Rev. L. C., M.A., Ph.D.,  
Rector of St. Bede's College

C Casati, Captain G.

Cawley, Frederick, M.P.

Chadwick, Alfred, M.D.

Chadwick, John, J.P.

A Chadwick, Thomas

Cheetham, J. F., J.P., F.I.Inst.

Chivers, C. T.

Chorlton, Isaac

Chorlton, James

Chorlton, J. C.

Chrystal, R. C.

A Churchill, Miss L. E.

Churchill, Wm. W., jun.

Clapham, G. H.

A Clarke, Charles A.

A Clarke, Councillor J.

Clayton, J. H.

Clegg, Miss E.

Clegg, Neville

C Clerke, Miss E. M., London

Cocks, John

A Cohen, Meyer

C Colbeck, Rev. A.

Collier, Edward

Collier, W. H.

Collmann, C., Consul for the German  
Empire

C Colquhoun, A. R., F.R.G.S., M.I.C.E.

Congo State, M. le Secretaire General,  
Department de l'Interieur

C Coningham, Captain H. J., F.R.G.S.

Cook, George T.

L Cooper, Mrs. A. H.

Corbett, William

Corbishley, Very Rev. Canon

Core, Professor T. H., M.A.

Costeker, Charles

Costley, Thomas

Cottingham, James

A Cottrill, J. J.

Cottrill, Mrs. J. J.

Coulthurst, S. L.

Coutts, Dr. J. K.

Cowan, E. W.

Cowburn, W. H.

Cowper, James P.

Cox, J. J., M.D.

Crabtree, William Henry

Credson, Alfred

Crook, H. T., C.E.

Crossley, W. J., J.P.

Crowther, Miss J., Blackley

Crowther, Miss E., Altrincham

L Cunliffe, W. J.

Curbstone, Walter

A Davies, Charles J.

A Davies, Ishmael

Dawkins, Prof. W. Boyd, M.A., F.R.S.

Dawkins, Mrs. W. Boyd

A Dawson, Charles

Deakin, Edward, jun.

Deakin, Thos. S.

Dean, Councillor J.

Dehn, Rudolph

A Delmas, Philippe, Bordeaux

Dennis, Cammack

Dent, Hastings C., C.E., F.L.S., F.R.G.S.

Dentith, Thomas

Derby, The Rt. Hon. the Earl of, G.C.B.

A Derbyshire, R. S.

Devonshire, His Grace the Duke of, K.G.

Dewhurst, Wm.

Dillon, Lawrence

Dixon, W. H.

A Donald, James

Done, B. C.

Donnell, Joseph

Donner, Edward

Douglas, J. Archibald

A Douglas Percy, Teheran, Persia

A Dowdall, J. B.

L Doxey, Alex.

L Doxey, Miss Ethel

Doyle, J. T.

Dreydel, Thos.

Duckworth, Charles

A Dyson, Humphrey

A Dyson, Samuel

Eason, Edward A.

\* Eccles Prov. Ind. Co-op. Soc., Ltd.

Eckhard, Gustave

Eckersley, William

Edmondson, James

Ege, Christian

Egerton of Tatton, The Right Hon. the  
Earl

Eggington, Thomas, J.P.

Eliazarian, S.

A Ellison, W. H.

Elwell, Miss

Elwen, George

A Ely, J.M.

England, A.

Enion, J. H.

L Ermen, Charles

Evans, William T

Farmer, R. J.

A Farnworth-with-Kearsley P.C.M.I. Sy.

A Farron, Thomas

C Fedotoff, A., Moscow

Fergusson, The Right Hon. Sir James,  
Bart., M.P.

Fern, George

cFief, J. du, Royal Belgian Geographical  
Society

Fildes, Henry

Findlow, Percy

Fitton, F. A., F.S.A.A.

Fleming, Hugh

Fletcher, Alfred James

Flux, Prof. Alfred Wm., M.A.

Forth, Isaac

Frank, Ernest

Franks, Aubrey

Frankenburg, Councillor I.

^Freeman, W. C.

HFreshfield, Douglas W., F.R.G.S.

^Fullerton, Hugh, J.P.

Gadd, The Rt. Rev. Monsignor Canon, V.G.

Gaddum, Alderman G. H., J.P.

Galbraith, A., junr.

Galloway, Arthur W.

Galloway, Alderman George, J.P.

^Garner, Charles T. I.

Garnett, Jeremiah, J.P.

Garnett, Stewart, J.P.

^Gerrard, James

Gibson, Alderman R., J.P.

Gill, John W.

Gill, T. J.

Gleave, Joseph James

Gleim, Fred

Glossop, J. P. B.

\*Golborne Urban District Council

HGoldsmid, Major-General Sir Frederic J.,  
C.B., F.R.G.S.

Goodbehere, Frederick

Goodwin, Alfred

Graefinghoff, H.

Grafton, Mrs., Heysham Hall

Graydon, S. J., M.D.

^Greenough, Richard, Leigh

^Greenwood, Alderman Jas., J.P.

Greenwood, Alderman John, J.P.

^Greenwood, W. Nelson, F.R. Met. Soc.,  
F.I.Inst., Glasson Dock

Greg, Ernest W., F.R.G.S.

LGreg, Francis, J.P.

Gregory, Theodore, F.C.A.

Gregory, W. G.

Griffiths, J. W.

LGroves, J. G., J.P.

LGroves, W. G., J.P.

Gudgeon, Robert

Guthrie, Alderman E., J.P.

Hadfield, George, J.P.

Hailwood, Councillor Anthony

LHall, J. Howard, Bury

Hall, Wm.

cHallett, Holt S., M.I.C.E., F.R.G.S.

Hallman, E. H.

Hallworth, Joseph

Hamilton, D. L., L.R.C.P.

Hamp, E. H.

^Hampson, Councillor Joshua

Hampson, T. W.

cHaulon, Rt. Rev. Bishop, Uganda

Hardman, John, Radcliffe

Hargreaves, George

Harker, George

Harker, Thomas

^Harper, William

H^Harrington, Mark W., Porto Rico

Harris, Thomas

Harrison, J. Dilworth, F.I.Inst.

^Harrison, John

Hassall, Councillor Thomas

Hatch, E. F. G., M.P.

Hawke, Edward G., B.A.

Hawkins, William

Haworth, Abraham, J.P.

Haworth, G. C., J.P.

Haworth, J. F.

LHealey, Councillor W., J.P.

Heap, Alderman W. T., J.P., Rochdale

Heape, Charles

Heathcote, R. G., M.D.

Helm, Elijah, Chamber of Commerce.

Helm, S. L.

Henriques, D. Q.

Hepworth, R. A.

^Hepworth, Mrs. R. A.

Herbertson, A. J., F.R.G.S., Oxford

Herford, Miss C.

Hesketh, W. R.

^Hewit, R. P.

Hewlett, E. G. W., B.A.

Heys, R. T.

Heyworth, Eli, J.P.

Hiersemann, K. W., Leipzig

Higgins, F. Platt-, M.P.

Higham, Councillor J. Sharp (His Wor-  
ship the Mayor of Accrington)

Hilton, Fred

Hilton, John S.

Hindle, James, L.R.A.M.

Hinners, Edward

LHinners, William, J.P.

Hinrichsen, S.

Hirschberg, Martin

Hodgson, Joseph

Hodgson, Councillor William

^Holden, Henry

Holland, Thos. A.

Holland, W. H., M.P.

^Hollins, James

Holt, Wm.

Hopkinson, A., Q.C. (The Principal of  
Owens College)

Hopkinson, Alderman J., J.P.

Hopkinson, Edward, D.Sc.

Horsfall, T. C., J.P.

Houghton, John

Houldsworth, Sir W. H., Bart., M.P.

Howarth, Leigh



- Howell, Lennox  
 Hoyle, W. E., M.A.  
 Hunter, Charles, C.C.  
 Hurst, C. J.  
 Hughes, Alfred, M.A.  
 Hughes, John P.  
 Hutton, J. Arthur  
  
 Illingworth, Charles  
 Illingworth, Walter  
 Irlam, Job  
  
 Jackson, Fred J.  
 Jackson, Dr. U. A., F.C.S.  
 Jackson, William  
 Johnson, F. S.  
 Johnson, Lionel M.  
 Johnson, William  
 Johnson, Mrs. W.  
 Johnston, Sir H. H., F.R.G.S.  
 Johnstone, Charles Andrew  
 Jones, Wm.  
 Jones, W. C.  
 Jordan, Albert  
 Jucker, J.  
  
 Kalisch, M.  
 Karnovsky, Rudolph  
 Kelyack, T. N., M.D., &c.  
 Kerr, John  
 Kershaw, B.  
 Kessler, Henry  
 Kessler, William  
 Kessler, William, jun.  
 Keymer, J. H.  
 Keymer, Sydney L., F.R.G.S.  
 Kinch, W. S.  
 King, J. E., M.A., Manchester Grammar  
 School  
 Kirkpatrick, Henry, J.P.  
 Kolligs, F. H., Consul for Ecuador  
 Kolp, N.  
 Knoop, Hy. L.  
 Kullmann, Julius  
  
 Laidlaw, Adam  
 Lancaster, Miss  
 Lancaster, James  
 Langdon, E. H., B.A.  
 Langley, H. M., Consul for Honduras  
 and Salvador  
 Lanyon, James, J.P.  
 Latham, J. P., Paris  
 Laverton, Walter  
 Law, Miss Annie E., L.L.A.  
 Law, T. H.  
 Lawson, R. G.  
 Lea, Dr. Arnold W. W.  
 Ledward, H. Davenport  
 Lee, Henry, J.P.  
 Leech, Alderman Sir Bosdin T., J.P.  
 Leech, Lady  
 Leech, Miss  
 Leech, Professor D. J., M.D.  
  
 Leech, Wm. Booth  
 Leeman, E.  
 Leigh, John  
 Leigh, Alderman Sir Joseph, J.P.  
 Leigh Literary Society  
 Lemos, Professor Angel Ma Diaz  
 Levinstein, Ivan  
 Levy, Eliot  
 Lewis, J. H.  
 Lewis, Mrs. J. H.  
 Lewis, J. Tetlow  
 Little, David Ainsworth  
 Lombard, Edward Leahy  
 Lord, Charles  
 Lord, Elliott L.  
 Lord, Henry, J.P.  
 Lord, John  
 Lord, W. C.  
 Lorne, The Right Hon. the Marquis of,  
 K.T., M.P.  
 Luke, Robert  
  
 McAdam, John  
 Macara, C. W., J.P.  
 Macdonald, Lieut-Col. J. R. L., R.E.  
 McDougall, Alderman A., J.P.  
 Macfarlane, James  
 MacGregor, H. E. Sir Wm., K.C.M.G.  
 Machin, James S.  
 MacKegg, Donald  
 Mackillop, A.  
 McLardy, Samuel  
 Maclean, P.  
 McNicol, A.  
 Maginnis, R.  
 Magson, John  
 Makin, E., jun.  
 Malcolm, James G.  
 Manchester, The Right Rev. the Lord  
 Bishop of (Dr. Moorhouse)  
 Manchester Corporation, Free Libraries  
 Committee  
 Mandleberg, G. C., J.P.  
 Mandleberg, S. L.  
 Marsden, James, J.P.  
 Marshall, Sir A., J.P.  
 Martin, Horace C.  
 Marx, Charles  
 Mason, Rupert  
 Massey, Samuel  
 Mather, John  
 Mather, William, J.P.  
 Maybury, J. H.  
 Maybury, W. H.  
 Mazzebach, C.  
 Mee, John  
 Megson, C. H.  
 Mehl, F.  
 Mellalieu, Councillor H. H., J.P.  
 Mellor, E. W., J.P., F.R.G.S., F.I.Inst.  
 Mellor, Wm. H.  
 Michaelis, R. N.  
 Middleton, T. C., J.P.  
 Midgley, W. B.

Millers, John  
 Millers, R. T.  
 Millington, Alfred A.  
 Millington, Miss  
 Milne, J. D., J.P.  
 Milner, Edward, J.P., Northwich  
 Milnes, C. B.  
 Molesworth, Jas. Murray, C.E, F.R.G.S  
 H Moloney, H. E. Sir Alfred, G.C.M.G.,  
     Governor of Grenada, &c.  
 Moon, John  
 H Morgan, E. Delmar, F.R.G.S.  
 Morley, Henry  
 Morris, James Alfred  
 Morris, John, jun.  
 Mosley, William  
 \* Moss Side School Board  
 Mottram, Alderman Sir Richard, J.P.  
 Moxon, Thomas Bouchier  
 Murray, Adam  
  
 H Nansen, Dr. F.  
 L Neil, Alexander  
     Neill, Robert, J.P.  
     Nesbitt, Thomas  
 A Newbigging, Thos., C.E  
 L Newby, John R.  
     Newett, W. H.  
     Newton, George  
     Noar, H.  
     Nodal, J. H.  
     Nordlinger, C.  
     Notman, N., M.A.  
     Nuttall, Harry  
     Nuttall, Mrs. Harry  
     Nuttall, Joseph  
  
     Ogden, Samuel, J.P.  
     Ogden, J. T., F.I.Inst.  
 \* Oldham Corporation, Free Libraries  
     Committee  
     Oldham, H. Yule, M.A., F.R.G.S.  
 A Ollivant, Alfred  
 O'Neill, H. E., H.B.M. Consul, Rouen.  
     Oppenheim, Siegmund, J.P., Vice-Consul  
         for Austria-Hungary  
     Oram, Mrs.  
     Orr, Dr. J.  
  
 Parkinson, J. B.  
 Pascoe, J. R., Woodford, Essex  
 Paulsen, Paul A., Consul for Denmark  
 A Payton, F. J.  
     Pearson, Edwin  
     Pearson, George  
     Pearson, Thomas  
 A Pendlebury, Andrew, jun.  
 A Peters, Ralph  
     Philip, George  
     Philips, Herbert, J.P.  
     Philips, Mrs. H.  
     Phillips, R. C.  
     Phythian, Arthur T.

Pickering, Mrs.  
 Pickering, F. A.  
 Pickering, John R.  
 Pilcher, Colonel Jesse  
 L Pilkington, Edward, J.P.  
 C Pingstone, A.  
     Pingstone, H. C.  
     Poppellwell, Rev. W., M.A.  
 L Porter, Rev. W. C., M.A., East Africa  
     Power, J. F.  
     Pownall, G. H.  
 \* Prestwich Co-operative and Industrial  
     Society  
 A Price, J. W.  
     Price, Thos.  
  
 A Radcliffe, F.  
     Ramsay, P. J.  
     Reade, Charles E.  
 A Reade, S. J.  
     Redford, William  
 A Redman, Rev. A., M.A., Heywood  
     Reed, J. Howard  
     Reid, James S.  
 L Reiss, Alec  
     Reiss, Fritz  
     Reiss, Gustav  
     Reiss, J. A.  
     Reynolds, R. H.  
     Richardson, A.  
     Richardson, G. M.  
 A Richardson, J.  
     Riddick, Robert  
 A Rigg, Fred  
     Riley, Thomas  
     Robertshaw, Fred, J.  
     Robertshaw, James  
 A Robertson, W. J.  
     Robinow, Max  
     Robinson, Alderman B., J.P.  
     Robinson, W. H.  
     Rodier, James P.  
 A Roeder, Charles  
 C Rogers, Lieut.-Col. E., F.R.G.S.  
     Rogerson, James  
     Roskill, C.  
     Ross, Colin, J.P.  
     Rothschild, Hon. Walter, M.P.  
     Rothwell, Hamlet  
     Rothwell, Councillor W. T., J.P.  
     Rowbotham, W. H.  
     Rushworth, Hy.  
     Russel, A. C.  
  
 \* Salford Corporation Free Libraries  
     Committee  
     Salomon, Rev. Dr. B.  
     Saltmarsh, J. G., A.R.C.Sc.  
     Sampson, Joseph  
     Samter, J.  
     Sawer, Thomas  
     Scholfield, A. Y.  
     Scholfield, Mrs. A. Y.  
     Schuster, F. L.

- Schutt, Dr. R., Hamburg  
 Schwann, C. E., M.P.  
 Scott, C. Archibald  
 Scott, C. H., J.P.  
 Scott, C. P., M.P.  
 AScott, Thomas  
 ASeed, G. H.  
 ASefton, Thomas T.  
 Sharp, E. G.  
 Sharp, W.  
 Shaw, Reginald W.  
 Shaw, Wm.  
 Shelmerdine, R. H.  
 Sherratt, William, J.P.  
 Siegler, H.  
 Simon, Louis  
 Simonsen, L. M.  
 Simpole, G. W.  
 ASimpson, J. Harvey  
 Sinclair, Dr., J.P.  
 ASlater, Joseph  
 LSmallman, F., F.R.G.S.  
 Smith, Edwin  
 LSmith, Rev. F. C., B.A., F.R.G.S.  
 Smith, John R.  
 Smith, T. M.  
 Snaddon, J.  
 ASouthward, Henry  
 Sowerbutts, Eli, F.R.G.S.  
 ASowerbutts, Harry  
 ASowerbutts, T. W.  
 Sowler, Harry  
 Spence, David  
 LSpence, Frank  
 Spence, J. F.  
 Spencer, Reuben, J.P.  
 Stadelbauer, H.  
 Stanfield, Thomas  
 Stanley, Alderman G. T., J.P.  
 HStanley, Henry Morton, F.R.G.S.  
 HSteinthal, H. M.  
 Steinthal, Rev. S. A., F.R.G.S.,  
     F.I.Inst.  
 Steinthal, E. F.  
 Steinthal, Egbert  
 Stephens, Councillor W., J.P.  
 Sternberg, S.  
 AStewart, John, junr.  
 AStewart, Robert  
 Stones, Wm.  
 Storey, Henry E.  
 Stott, C. B.  
 Stott, C. H.  
 AStout, Mrs. M. A.  
 Stromeyer, C. E., F.R.G.S.  
 ASullivan, J. F.  
 Susmann, E.  
 Sutton, Edward  
 Sutton, J. B.  
 Swale, John  
 Swindells, Rupert, M.I.C.E., F.R.G.S.  
 LSykes, Arthur H., D.L., J.P.  
 Sykes, Mark L.  
 Symonds, The Rev. Canon  
 Tatham, Leonard  
 ATatton, Lees W.  
 ATaylor, Albert  
 Taylor, Frederick  
 Taylor, James A.  
 Taylor, Walter, M.I.C.E.  
 Terry, Henry  
 Thewlis, J. Herbert  
 LThomas, George  
 LThomasson, J. P.  
 Thompson, John, Choriton-cum-Hardy  
 Thompstone, Mark W.  
 Thomson, John, Bowdon  
 CThomson, J.P., F.R.S.G.S., Brisbane  
 Thomson, R.  
 Thorp, Henry  
 Tomlinson, Fred  
 LTrafford, Sir Humphrey F. de, Bart.  
 Trainberger, B., Salzburg  
 ATrevor, Councillor Wm., J.P.,  
 ATurnbull, Thomas  
 Tustin, R. B. B.  
 Uhde, Max  
 AUre, William  
 \*Urmston Independent Methodist Literary Society  
 LVaughan, His Eminence Cardinal, Arch-  
     bishop of Westminster  
 AVeevers, Harrison, A.M.Inst.C.E.  
 AVivian, Rev. W., F.R.G.S.  
 Waddington, W. Angelo  
 Wade, Richard  
 HWainwright, Joel, J.P.  
 Wainwright, Thomas Foster  
 AWakefield, Rev. Thos., F.R.G.S.  
 Walkden, John, C.C.  
 \*Walkden Co-operative Society Limited  
 Walker, Mrs. Alice  
 Walker, Edward J.  
 Walker, J. A.  
 AWalker, James N.  
 Walker, John Hy.  
 Walker, Thomas  
 Wallace, Miss M. W.  
 AWallwork, A.V.  
 Wallwork, Roughsedge  
 Walmsley, F., F.S.A.A., F.S.S.  
 HWard, Professor A. W., M.A., Litt.D.,  
     Principal of Owens College  
 Ward, Thomas, F.R.G.S.  
 cWardrop A. Tucker, Labuan  
 AWarren, Geo. H.  
 Waterhouse, I. C.  
 AWatkinson, J. W.  
 AWatson, Colonel C. M., R.E.  
 Watson, H. J.  
 Watson, Joseph  
 Watt, Richard H.  
 AWatts, W. T.  
 AWebster, Herbert R.  
 Webster, John



- |  |                                |
|--|--------------------------------|
| Welch, J. L.   | Wood, George Hervey            |
| Welter, H. (Bibliothèque National,<br>Section de Géographie, Paris). | L Wood, George W. Rayner, J.P. |
| Whitelegg, James   | Wood, Henry                    |
| Whitelow, E. T., A.M.I.C.E., F.R.A.S.                                | Wood, Councillor W.            |
| Whittaker, Walter  | Woodhouse, S. T.               |
| Whyman, Councillor Philip  | Woolfenden, Joseph, jun.       |
| Wilde, James   | Woolley, George Stephen        |
| Wilde, James D., M.A.  | Woolley, Hermann, F.R.G.S      |
| Wilkinson, Alderman James F, J.P.                                    | Δ Woolston, Miss M.            |
| Wilkinson, T. R.   | Worswick, Dr. F. H.            |
| Wilkinson, Wm.   | Worthington, S. Barton         |
| Willett, H.  | Wrathmell, T.                  |
| Williams, Captain  | Δ Wright, Miss A. Romley       |
| Williamson, R. T., M.D.  | Δ Wright, Miss J. E.           |
| Δ Williamson, Miss F. M.   | Wrigley, H. G.                 |
| Williamson, Wm. Henry  | cWylde, A. B., Suakin          |
| L Wilson, James  | Yates, J., M.D., J.P.          |
| Wilson, Lawrence   | H Yeats, John, LL.D            |
| Wilson, Wm., J.P.  | Young, Arthur                  |
| Winstanley, Thomas   | Young, G. H.                   |
| Δ Winstanley, T. G.  |                                |
| H Winton, Major General Sir Francis de,<br>R.A., K.C.M.G., F.R.G.S.  | Zimmern, Fritz                 |
| Δ Wood, George, Bolton   | Zimmern, Mrs.                  |

THE  
MANCHESTER GEOGRAPHICAL SOCIETY.

---

RULES.

---

I. OBJECT AND WORK.

The object of the Manchester Geographical Society is to promote the study of all branches of Geographical Science, especially in its relations to commerce and civilisation.

The work of the Society shall be:—

1. To further in every way the pursuit of the science; as, by the study of official and scientific documents, by communications with learned, industrial and commercial societies, by correspondence with consuls, men of science, explorers, missionaries, and travellers, and by the encouragement of the teaching of geography in schools and colleges.

2. To hold meetings at which papers shall be read, or lectures delivered by members or others.

3. To examine the possibility of opening new markets to commerce and to collect information as to the number, character, needs, natural products and resources of such populations as have not yet been brought into relation with British commerce and industry.

4. To promote and encourage, in such way as may be found expedient, either alone or in conjunction with other Societies, the exploration of the less known regions of the earth.

5. To inquire into all questions relating to British and Foreign colonisation and emigration.

6. To publish a Journal of the proceedings of the Society, with a summary of geographical information.

7. To form a collection of maps, charts, geographical works of reference, and specimens of raw materials and commercial products.

8. The Society shall not enter into any financial transactions beyond those necessarily attached to its declared object, and shall not make any dividend, gift, division, or bonus in money unto or between any of its members.

II. ORGANISATION.

9. The Society shall consist of ordinary, associate, corresponding, and honorary members.

10. A Council shall be chosen annually from the ordinary members to conduct the affairs of the Society. It shall consist of a President, four or more Vice-Presidents, a Treasurer, two or more Honorary Secretaries (including a Secretary for Foreign Correspondence), and twenty-one Councillors.

11. There shall be three Trustees elected by the Society, who shall hold office until death, disability, insolvency, or resignation. They shall be members of the Council by virtue of their office.

12. Any vacancy occurring in the Council during the current year may be filled up by the Council.

### III. ELECTION OF MEMBERS.

3. Every candidate for admission into the Society as an ordinary or an associate member must be proposed by a member. The proposal shall be read out at the next Ordinary Meeting of the members, and any objection shall be forwarded in writing to the Secretary within seven days.

14. The election of members is entrusted to the Council. The names of those elected shall be announced from the chair at the next Ordinary Meeting after the election.

15. The Secretary shall within three days forward to every newly-elected member notice of his election, a copy of the Rules of the Society, and a card announcing the days on which the Ordinary Meetings will be held during the session. But the election of an ordinary or associate member shall not be complete, nor shall he be permitted to enjoy the privileges of a member, until he shall have paid his first year's subscription. Unless such payment be made within three calendar months from the date of election the election shall be void.

16. The Council shall have power to elect honorary and corresponding members.

17. Women shall be eligible as members and officers of the Society.

### IV. PAYMENTS.

18. Any ordinary member shall pay an annual subscription of £1 1s., or he may compound by one payment of £10 10s. An associate member shall pay an annual subscription of 10s. 6d. The Society's year shall begin on the first day of January.

19. Members shall not be entitled to vote or to enjoy any other privilege of the Society so long as their payment shall continue in arrear, but associate members shall not vote nor shall they take any part in the government of the Society.

20. The first annual payment of a member elected in November or December shall cover his subscription to the 31st December in the year following.

21. On the first day of January in each year there shall be put up in the rooms of the Society a complete list of the members with the amount of their subscription due, and as the amounts are paid the fact shall be marked on the list.

22. Notice shall be sent to every member whose subscription shall not have been paid by the first of February, and if the arrears are not discharged by the first of July the Council may remove the member from the list of members. Any member, whose subscription is in arrear for two years shall not be entitled to receive the Journal of the Society.

### V. MEETINGS.

23. The meetings of the Society shall be of three kinds—Ordinary, Annual, and Special.

24. In all meetings a majority of those present shall decide all questions, the President or Chairman having a casting vote in addition to his own.

#### ORDINARY MEETINGS.

25. The Ordinary Meetings of the Society shall be held once a month, from the month of October to the month of May, or oftener, if judged expedient by the Council.

26. All members whose subscriptions are not in arrear shall have a right to be present. All ordinary members shall have the privilege of introducing one visitor.

27. The order of proceedings shall be as follows :—

- (a) The minutes of the last meeting to be read and if correctly recorded they shall be signed by the Chairman.
- (b) Presents, whether of money, books, maps, charts, instruments or specimens made to the Society to be announced.
- (c) The election of new members to be declared and the names of candidates to be read.
- (d) Papers and communications to be read and discussed.



28. At these meetings nothing relating to the rules or management shall be brought forward, but the minute book of the Council shall be on the table at each meeting for the inspection of any member, and extracts therefrom may, with the consent of the chairman, be read to the meeting on the requisition of any member.

29. On occasions of exceptional interest the Council may make provision for a larger admission of visitors.

#### ANNUAL MEETINGS.

30. The Annual Meeting of the members shall be held at such time and place as the Council shall determine.

31. Fourteen days' notice of such meeting shall be sent to every member within the United Kingdom who has given his address to the Secretary, and notice of the meeting shall be advertised in such newspapers as the Council may direct.

32. The object of this meeting shall be to receive the Annual Report of the Council and the Treasurer's Balance Sheet, to hear the President's address, to elect the Council and officers for the ensuing year, and to transact any other business.

33. Any two ordinary members may nominate candidates for the Council or for office not later than one week prior to the day of election, and the names of candidates so nominated shall be at once put up in the rooms of the Society. The election of the Council and officers shall be by ballot.

#### SPECIAL GENERAL MEETINGS.

34. The Council may call a Special General Meeting of the Society whenever they shall consider it necessary, and they shall do so if required by 20 ordinary members.

35. A week's notice of the time and object of every Special Meeting shall be sent to all members. No other business shall be entertained than that of which notice has been thus given.

36. Twenty ordinary members shall form a quorum.

### VI.—COUNCIL AND OFFICERS.

#### THE COUNCIL.

37. The government of the Society shall be entrusted to the Council, subject to the rules of the Society.

38. The Council shall annually elect a Chairman and Vice-Chairman.

39. The President or the Chairman, or any three members of the Council, may at any time call a meeting thereof, to which every member of the Council shall be summoned.

40. Seven shall form a quorum.

41. In order to secure the most efficient study and treatment of the various subjects which constitute the chief work of the Society, the Council may appoint Committees for special purposes. These Committees, with the approbation of the Council, may associate with themselves any persons—whether members of the Society or not—from whom they may desire to obtain special assistance or information. The Committees shall report to the Council the results of their proceedings.

42. The President, Chairman, Vice-Chairman of the Council, and the Honorary Secretaries, shall, by virtue of their offices, be members of all Committees appointed by the Council.

#### PRESIDENT AND VICE-PRESIDENTS.

43. The President is, by virtue of his office, the chairman of all the meetings of the Society. In the absence of the President, one of the Vice-Presidents may preside.

#### CHAIRMAN OF THE COUNCIL.

44. It is the duty of the Chairman of the Council to see that the rules are properly observed, to call for reports and accounts from Committees and Officers, and to summon, when necessary, special meetings of the Council and of Committees.

## TREASURER.

45. The Treasurer has the charge of all accounts ; he shall pay all accounts due by the Society after they have been examined and approved by the Council.

46. He shall see that all moneys due to the Society are collected, and shall have power, with the approval of the Council, to appoint a collector. All moneys received shall be immediately paid to the bankers of the Society.

47. The bank passbook and the book of accounts shall be laid upon the table at every ordinary meeting of the Council.

48. The accounts shall be audited annually by two members, who shall be elected at an ordinary meeting at least one month before the Annual Meeting.

## SECRETARIES.

49. The duty of the Honorary Secretaries shall be :—

- (a) To conduct the correspondence of the Society and of the Council.
- (b) To attend the meetings of the members and of the Council, and minute their proceedings.
- (c) At the ordinary meetings, to announce gifts presented to the Society since their last meeting ; to read the names of all new members and of candidates for admission, and the papers communicated to the Society, which have been directed by the Council to be read.
- (d) To have immediate superintendence of all persons employed, to make arrangements for the meetings of the Society, and to take charge of all maps, books, furniture and other effects.

50. It shall be the more especial duty of one of the Honorary Secretaries to conduct, as may be directed by the Council, correspondence with Foreign Societies, and with persons resident abroad.

51. In addition to the Honorary Secretaries, there shall be a paid Secretary appointed by the Council, whose duties shall be to assist the Honorary Secretaries, to issue the notices of the Council and of the Society, and to act under the instructions of the Council.

---

*The foregoing Rules, as now amended, were approved and adopted at a meeting of the members of the Society, of which due notice had been given to the members, held in the Town Hall, Manchester, Wednesday, October 3rd, 1894.*

(Signed)

GEORGE, *President.*

S. ALFRED STEINTHAL, *Chairman.*

F. ZIMMERN, *Honorary Secretary.*

JAS. D. WILDE, M.A., *Honorary Secretary.*

ELI SOWERBUTTS, *Secretary.*

---

[COPY.]

It is hereby certified that this Society is entitled to the benefit of the Act 6 and 7 Vict., Cap. 36, intituled "An Act to exempt from County, Borough, Parochial, and other Local Rates, Lands and Buildings occupied by Scientific or Literary Societies."

Seal of Registry of  
Friendly Societies.

This 15th day of January, 1895.

E. W. B.

## LIST OF MAPS, BOOKS, JOURNALS, &c.,

ACQUIRED BY THE SOCIETY FROM JANUARY 1ST TO DECEMBER 31ST, 1899.

### MAPS.

#### GENERAL.

- Lowthian Green's Tetrahedral Map of the World. London: Royal Geographical Society, 1899. \* The Society.
- Track of the German Deep Sea Expedition, 1898-99. London: Royal Geographical Society, 1899. \* The Society.
- 65 Early Engravings, including Maps of the Black Sea, Orkney and Shetland Islands, Newfoundland, &c. \* Mr. George Thomas.

#### EUROPE.

- Reduced Ordnance Survey of England and Wales. Scale, 2 miles to an inch. Sheet 8. Liverpool and Manchester (20 x 30 inches). Edinburgh: John Bartholomew and Co.
- Relief Map of the Liverpool and Manchester District. Scale: Horizontal —  $1\frac{3}{8}$  miles to an inch; Vertical, 1,200 feet to an inch. Liverpool: Philip, Son and Nephew.
- Ordnance Survey Map of Ireland, showing Poor-Law Unions, Light Railways, and Relief Works, 1898. Scale, ten miles to an inch. \* Miss Balfour.
- Norway. Topografisk Kart over Kongeriget Norge. Scale 1/100,000. Sheets, 4A, 27A, 27C, 17J, 16K, 15L, 16L, 3S, 2T, 3T, 4Y. \* Norges Geografisk Opmaalng.
- Norway. Special "Kyst Kart." Scale, 1/50,000. Sheets, A16<sup>I</sup>, A16<sup>II</sup>, B37<sup>II</sup>, B47, B49. \* Norges Geografisk Opmaalng.
- Norway. General "Kart." Scale, 1/400,000 Sheet XIII. \* Norges Geografisk Opmaalng.
- Norway. Amtskart. Scale, 1/200,000. Sheet: S. Trondhjems Amt. S.O. \* Norges Geografisk Opmaalng.
- Map of Cook's Tours in Central Europe.
- Bird's-eye View of Rome in 1890. *Graphic*, May 24, 1890. \* Mr. George Thomas.
- The Urmi Lake Basin (Azerbaijan), by R. T. Günther, M.A. Compiled partly from Russian and English Maps, and partly from route surveys by General H. Schindler. Scale, 1/1,000,000. London: Royal Geographical Society, 1899. \* The Society.
- King Charles' Land, Spitsbergen. From a Survey by Kjellström and Hamberg, of the Swedish Polar Expedition, 1898. Scale, 1/250,000. London: Royal Geographical Society. \* The Society.
- Iceland. To illustrate Paper by Dr. Th. Thoroddson. Scale, 1/1,000,000. London: Royal Geographical Society, 1899. \* The Society.



## ASIA.

- Bokhara, with Mr. W. R. Rickmer's route, 1898. Scale, 1/200,000. London : Royal Geographical Society. \* The Society.
- Map of China. Prepared for the China Inland Mission, 1898.
- Chinese Shan States, or Sip Song Panna. From a Drawing by F. W. Carey. Scale : 1/1,000,000. London : Royal Geographical Society, 1899. \* The Society.
- Chine Méridionale et Tonkin, par le Capitaine Friquignon. Scale, 1/2,000,000. Paris : Maison Andriveau-Goujon. H. Barréré, Editeur. 1899. \* M. Camille Guy, Chef du Service Géographique des Colonies.
- Central and Southern Manchuria, 1899. Scale, 1/2,000,000. London : Royal Geographical Society. \* The Society.

## AFRICA.

- Afrique. Carte Générale des voies de Communications. By Lieut. Oliver. Scale, 1/15,000,000. \* M. Camille Guy, Chef du Service Géographique des Colonies.
- Carte de la Mission Blondiaux, 1897-98, levée et dressée par le Chef de Mission. Scale, 1/250,000. Service Géographique des Colonies, Paris. \* French Colonial Minister.
- Carte de la Bouche du Niger, dressée par le Lieut. Spicq, et ayant pour base la Carte de Mr. le Gouverneur Binger et les travaux récents du Commandant Marchand, etc. Paris : Maison Andriveau Goujon. H. Barrere, Editeur. 2nd Edition, 1898. Echelle, 1/1,500,000. \* M. Camille Guy, Chef du Service Géographique des Colonies.
- The Western District of the Benue River, from a Survey by L. H. Moseley. Scale : 1/1,000,000. London : Royal Geographical Society, 1899. \* The Society.
- Carte du Royaume de Congo, du Monomotapa et de la Cafrerie, 1719. Copy issued with "Die Finanz-Chronik," 29 Juli, 1899. \* Revd. S. A. Steinthal, F.R.G.S.
- Central Africa, with Stanley's Route, and Portrait Group of Officers. *Daily Graphic*, July 5th, 1890. \* Mr. George Thomas.
- Map of the Seat of War in Africa. Prepared in the Adjutant-General's Office, War Department, U.S.A., 1899. Scale, 20 miles to an inch. \* National Geographic Society.
- The Castle Line Map of South Africa. Scale 38 miles to an inch. London : Donald Currie and Company. \* The Publishers.
- The Times* Map of British South Africa, the Transvaal, and Orange Free State, with insets of Natal border, Kimberley, Mafeking, and Witwatersrand. Scale, 40 miles to an inch, or 1/2 500,000. London, 1899.
- Bird's-eye View of South Africa. London : G. W. Bacon and Co.
- South Africa, with Portraits of President Kruger and Sir A. Milner. *Christian Herald*, No. 25, June 22nd, 1899.
- Map of South African Republic and adjoining territories. Scale, 25 miles to an inch, or 1/1,584,000. Intelligence Division, War Office, 1899, No. 1159. \* The Director of Military Intelligence.
- Map of the Boer Republics, compiled from official sources. Scale 20 miles to an inch. London : *Daily Chronicle*, 1899.
- New Relief Map of the Transvaal. Compiled by E. A. Mackenzie. Scale, 16 miles to an inch. London : The Universal Publishing Co.
- Map of the Biggarsberg, and of Communications in Natal north of the Parallel of Ladysmith. Scale, 4 miles to an inch. Intelligence Division, War Office. No. 1442. September 1899. \* The Director.
- Esboco Hydrographia do Rio Limpôpo entre a Itha dos Patos eo Vao do Gongunhana abrangendo o rio Changane até as Monte Chibuto. Feito pelo 1º tenente da Armada Alvaro Andréa commandante da Lancha Cª "Capello" durante as operações de campanha de setembro a dezembro de 1895. \* Lisbon Geographical Society.

- Lake Nyasa. Compiled from observation of Lieutenants E. L. Rhoades and W. B. Phillips, R.N.R., of the British Central Africa Protectorate. Scale, 1/1,000,000, or 15·78 miles to 1 inch. London: Royal Geographical Society. \* The Society.
- Nyasa. Tanganyika Plateau. Scale, 1/1,000,000. London: Royal Geographical Society, 1899. \* The Society.
- Road Making and Surveying in British East Africa. By Captain G. E. Smith, R.E. Scale, 1/1,250,000. London: Royal Geographical Society, 1899. \* The Society.
- Uganda Protectorate and Country to the North. Explored by the Macdonald Expedition, 1897-1898. Scale, 1/2,500,000. London: Royal Geographical Society, 1899. \* The Society.
- Lake Choga and neighbourhood. From a Survey by the late Captain R. T. Kirkpatrick, 1898. Scale, 1/1,000,000. London: Royal Geographical Society, 1899. \* The Society.
- The Course of the River Juba, reduced from a map published by the Intelligence Division, War Office. Scale, 1/1,000,000. London: Royal Geographical Society, 1899. \* The Society.

#### AMERICA.

- Sketch Map of Journey from Port Churchill to Lake Tha-Anne. By the Rev. J. Lofthouse. Scale, 1/3,000,000. London: Royal Geographical Society, 1899. \* The Society.
- Canadian Rocky Mountains. By G. P. Baker, and J. Norman Collie, 1897-98. Scale, 1/500,000. London: Royal Geographical Society, 1899. \* The Society.
- The Glaciers of South Eastern Alaska. By Otto J. Klotz. London: Royal Geographical Society, 1899. \* The Society.
- Sketch Map of Part of Rio Orinoco, and Rio Cuchivero. From a Survey by Major Stanley Paterson, Argyll Highlanders. Scale, 1/800,000, or 12 miles to 1 inch. London: Royal Geographical Society. \* The Society.
- Mapa de Puerto-Rica é Isles Virgenes. Por T. Domingo. Sulsona, 1892. \* Mr. Mark W. Harrington.
- Country surrounding La Paz, with Sir M. Conway's route, 1898. Scale, about 6 miles to the inch. London: Royal Geographical Society, 1899. \* The Society.
- Plane-Table Sketch-Survey of the West Slope of the Cordellera Real, from Illampu to Illimani. Surveyed and drawn by Sir M. Conway, 1898. London: Royal Geographical Society, 1899. \* The Society.

#### OCEANIA.

- Map showing the Explorations in South and West Australia, by the Elder Exploring Expedition, commanded by D. Lindsay, F.R.G.S., 1891-2. Scale, 16 miles to 1 inch. \* The South Australian Royal Geographical Society.
- Geological Map of Coolgardie. By T. Blatchford and E. L. Allhusen, 1898. Scale, 10 chains to an inch. Perth: Ministry of Mines. \* The Agent-General for Western Australia.
- Geological Map of the Collie Goldfield. By A. G. Maitland, Government Geologist. Scale, 40 chains to an inch. Perth: Ministry of Mines, 1898. \* The Agent-General for Western Australia.
- Geological Map of Northampton. By A. Gibb Maitland, Government Geologist. Scale, 20 chains to an inch. Perth: Ministry of Mines, 1898. \* The Agent-General for Western Australia.
- Caroline Islands. London: Royal Geographical Society, 1899. \* The Society.
- Christmas Island. Partly from a Survey by C. W. Andrews, 1897-98. Scale, 1/100,000. London: Royal Geographical Society, 1899. \* The Society.

#### ANTARCTIC REGIONS.

- Antarctic Regions. Maps showing present state of research. By J. G. Bartholomew, F.R.S.E., 1898. London: Royal Geographical Society. \* The Society.

# ATLASES, ALBUMS, &c.

- Historical Atlas of Modern Europe. (See List of Exchanges.) \* Clarendon Press, Oxford.
- The World-Wide Atlas of Modern Geography. Political and Physical. Containing 128 Plates and Complete Index. With an introduction by J. Scott Keltie, LL.D., &c. Fourth Edition. Edinburgh and London: W. and A. K. Johnston. 1898.
- Vollständiger Hand-Atlas, von Deutschland und den Colonien. 16 Karten-Seiten. 10 Pfennig. Leipzig: A. O. Paul. \* Mr. T. C. Horsfall.
- Photographic Album of English Lakes. \* Mr. George Thomas.
- Photographic Album of Seascale and District. \* Mr. George Thomas.
- Photographic Album of Norrköping. \* Mr. George Thomas.
- Atlas of the Manufactories in Moscow Government, 1872, with plans and explanation. 2 volumes. \* Mr. George Thomas.
- Photographic Albums of Russian Peasants (Three). \* Mr. George Thomas.
- Photographic Album of Warszawy. \* Mr. George Thomas.
- Photographic Album of München. \* Mr. George Thomas.
- Rheinisches Album oder Beschreibung, Geschichte und sage des Rheinganes und Wisperthales von Adelheid von Stolterfoth. Mainz: C. G. Kunze. \* Mr. Geo. Thomas.
- Photographic Album of Switzerland. \* Mr. George Thomas.
- Photographic Album of The Lake of the Four Cantons, Switzerland. \* Mr. George Thomas.
- Photographic Album of Rouen. \* Mr. George Thomas.
- Photographic Album—Vistas del Monasterio de Montserrat. \* Mr. George Thomas.
- Basket worked by Prisoner in Dungeon at Tangiers, in November, 1881. (Presented to the Museum.) \* Mr. George Thomas.

## BOOKS.

### GENERAL.

- Man and His Work: an Introduction to Human Geography. By A. J. Herbertson, Ph.D. and F. D. Herbertson, B.A. London: A. and C. Black. 1899. \* The Publishers.
- Vie Physique de Notre Planète devant les lumières de la Science Contemporaine. Par A. Klossovsky. 1899. \* The Author.
- Preliminary Notice of the Organisation and General Program of the 7th International Geographical Congress. Berlin, 1899.
- The Statesman's Year Book. Statistical and Historical Annual of the States of the World for the Year 1899. Edited by J. Scott Keltie, LL.D. London: Macmillan and Co. Ltd. \* The Editor.
- Geographischer Anzeiger, herausgegeben von Justus Perthes in Gotha. September, 1899. Kongreis-Nummer. \* Mr. T. Riedel, München.
- Otto Hubner's Geographisch-Statistische Tabellen aller Länder der Erde, 1897, von Prof. Dr. Fr. v. Juraschek. \* Mr. George Thomas.
- A Guide to Recent Large Scale Maps, including both Surveys and Compilations. Prepared in the Intelligence Division, War Office, by Alexander Knox, B.A., Map Curator. London: Eyre and Spottiswoode. \* Intelligence Division, War Office.



- Koloniale Zeitschrift. Vol. I. No. 1. (Specimen copy.) Herausgegeben von Dr. Hans Wagner. Leipzig: Verlag des Bibliographischen Instituts. \* The Publishers.
- Voyage in the "Sunbeam." By Mrs. Brassey. London: Longmans, Green, and Co. 1878. \* Mr. George Thomas.
- Spiderland. By Rose Haig Thomas. Illustrated. London: Chiswick Press, 1898. \* The Author.
- La Première Campagne Scientifique de la "Princess Alice IIe." Par S.A.S. le Prince Albert de Monaco. \* The Author.
- Exploration Océanographique aux Régions Polaires. Par S.A.S. le Prince Albert de Monaco. \* The Author.

#### BRITISH ISLES.

- Diplomatic and Consular Reports. Miscellaneous Series. 1899. Nos. 468-470, 472-502, 504-512. \* Mr. E. Sutton.
- Diplomatic and Consular Reports. Annual Series, 1898. Nos. 2034, 2035, 2037, 2043, 2044, 2056, 2058, 2061, 2074, 2078, 2081, 2082, 2091, 2097, 2107, 2109, 2112, 2113, 2115, 2117, 2119-2121, 2131, 2133-2137, 2139-2151, 2153-2168, 2170-2203, 2205-2225. \* Mr. E. Sutton.
- Diplomatic and Consular Reports. Annual Series. 1899. Nos. 2226-2270, 2273, 2274, 2276-2285, 2287, 2288, 2290-2303, 2305-2319, 2321-2332, 2335-2338, 2342-2345, 2347. \* Mr. E. Sutton.
- Accounts relating to Trade and Navigation of the United Kingdom for each month during the year 1896 (2-XI.); ditto for 1897 (43-XI.); ditto for 1898 (13-XI). \* Mr. E. Sutton.
- Life of H. T. Soppitt. By C. Crossland, with Portrait. \* Yorkshire Naturalists' Union.
- Topographical Dictionary of England. By S. Lewis. In four volumes. 3rd edition. With maps, plans, engravings, &c. London: S. Lewis and Co. 1835. \* Mr. George Thomas.
- Birds of the British Isles, drawn and described by John Duncan. With an introduction by Charles Dixon. London and Newcastle-on-Tyne: Walter Scott, Limited.
- Mean Temperature of the Surface Waters of the Sea round the British Coast. By H. N. Dickson, F.R.S.E. (Reprinted from R.M.S. Journal). \* The Author.
- St. Mary Abbots Parish Magazine. Kensington, Jan. 1899. \* Rev. F. C. Smith.
- Bristol Museum and Reference Library. Report for two years, 1896-98. \* Mr. H. Bolton.
- The Cornish Magazine. Illustrated. Edited by A.S. Quiller-Couch. Vol. I. July to Dec. 1898. Truro: Joseph Pollard. \* Mr. S. H. Brooks, F.I.Inst.
- Lyonesse. A Handbook to the Isles of Scilly. By J. C. Tonkin and B. Prescott Row, with a special introductory chapter by Sir Walter Besant. With Map and Illustrations. St. Mary's: J. C. Tonkin and Son. London: Beeching, Ltd. \* Mrs. Walker.
- University College, Sheffield. Calendar for 1899-1900. \* The College.
- Descriptive Account of Dewsbury, illustrated. \* Mr. George Thomas.
- Manchester Electric Trams. Conduit System *v.* Overhead Trolley. By Hans Renold. Reprinted from the *Manchester Guardian* of Tuesday, the 29th Nov., 1898. \* The Author.
- Port of Manchester. Official Sailing List. No. 3. April, 1899.
- Sketches of Southport, and other Poems. By T. Costley, F.R.S.A.I. With Portrait of the Author. Manchester: Barber and Farnworth, 1899. \* The Author.
- On a Newly-Discovered Neolithic Settlement at the Red Noses, New Brighton. Illustrated. By C. Roeder. \* The Author.

- Ingleton : The Land of Waterfalls. Description of the Famous Scenery, illustrated. Ingleton Advertising Association, 1899. \* The Publishers.
- Tourists' Guide to the Trosachs ; with Map and coloured Illustrations. London : T. Nelson and Sons. \* Mr. George Thomas.
- Three Welsh Spas : Llandrindod, Llangammarch, and Llanwrtyd. Illustrated.

# EUROPE.

- Nord-Fahrt nach dem Nordkap, den Inseln Ian Manen und Island. May-October, 1861. Von Dr. Georg Berna, &c. By Carl Vogt. Frankfurt-am-Main, 1863. \* Mr. George Thomas.
- Tours in Finland, the Land of a Thousand Lakes. With Maps and Illustrations. Hull : M. Harland & Son, 1899. \* Mr. George Thomas.
- Histoire de Pologne. Par J. Lelevel. In two volumes, with Atlas of Tables and Maps. Paris : Librairie Polonaise, 1844. \* Alderman J. Hopkinson, J.P.
- Coup d'œil économique sur la Serbie Actuelle : Par Victor Levy. Vienne : L. Rosner, 1899. \* The Author.
- Die Horizontalpendel-Station, Hamburg. Von Dr. R. Schütt. With diagrams. \* The Author.
- Die Mosel mit ihren Ufern und Umgebungen in Stahlstichen. Von Karl v. Damitz. 1838. Köln : Schumacher & Co. \* Mr. Geo. Thomas.
- Denmark : Its Medical Organisation, Hygiene, and Demography. Published with Subvention of the Danish Government. Copenhagen, 1891. \* Dr. T. N. Kelynack.
- Belgian State Railway and Mail Packet Time Tables, 1899. London : 53, Gracechurch St., E.C. \* The Manager.
- Handy Guide to Antwerp and Brussels. Antwerp : H. Stroobants and Son. Hotel de Hollande, 1899. \* The Publishers.
- Emile Zola : a study of his personality. With illustrations. By A. Macdonald. Washington, D.C., 1899. \* The Author.
- Le Livre d'Or de l'Exposition de 1900. No. I. Paris : E. Cornely : 1899. \* Mr. George Thomas.
- Le Petit Journal. Supplément Illustré. No. 438. \* Mr. C. H. Bellamy, F.R.G.S.
- The "Courier" for Ragaz, Prätigau, Davos, and the Engadine. Vol. VII., 13, 16, 20 ; VIII., 14, 15, 25 ; IX., 23-26 ; X., 5, 6, 9-16, 18-21, 24-26 ; XI., 1-6, 11. \* Dr. T. N. Kelynack.

# ASIA.

- "Die Nation," No. 42, July 15th, 1899, containing an account of Sven Hedin's Travels. \* Mr. N. Kolp.
- A Lecture on our Indian Empire, with Personal Reminiscences of a Tour from Charing Cross to the North-west Frontier. By E. F. G. Hatch, M.P. 1898. London : Waterlow and Sons, Limited. \* Mr. S. H. Brooks, F.I.Inst.
- List of Consultations, Proceedings, &c. Bengal. Vol. I. 1704-1858, Vol. II. 1859-1897. Preserved in the Record Department of the India Office, London. \* The Secretary of State for India.
- Report of the Mission to China of the Blackburn Chamber of Commerce, 1896-7. F. S. A. Bourne's Section. Illustrated with a number of maps. Blackburn : The North East Lancashire Press Co., 1898.
- The Chinese : Their Present and Future ; Medical, Political, and Social. By R. Coltman, junr., M.D. Illustrated with 15 plates. London : F. A. Davies, 1891. \* Dr. T. N. Kelynack.
- A Number of Chinese Coins. \* Mr. P. Maclean.
- China Association : Shanghai Branch. Annual Dinner, 1898. A Memorandum upon the Present Conditions of Foreign Trade in China. Farewell Dinner to Lord Charles Beresford. \* Mr. C. W. Sutton.

Mesny's Chinese Miscellany. Vol. III., No. 11, June 3rd, 1899. Shanghai: General Wm. Mesny, F.R.G.S. \* The Publisher.

La Chine Nouvelle. No. 3 of the *Revue Illustrée d'Extrême Orient*. Paris: F. Laur, 1899.

China, Anglo-America, and Corn. By Granville Sharp. Hongkong: *Daily Press* Office, 1899. \* The Author.

#### AFRICA.

A Captive Missionary in Mendiland. The Story of Rev. C. H. Goodman's experiences during the Sierra Leone Rebellion. By the Rev. W. Vivian, F.R.G.S. London: Andrew Crombie, Salisbury Square. \* Mr. J. H. Lewis.

Annales du Musée du Congo. Publiées par Ordre du Secrétaire d'Etat. Série I., Botanique. Illustrations de la Flore du Congo. Tome I. Fascicules 1, 2, 3. \* Etat Independent du Congo.

Annales du Musée du Congo. Publiées par Ordre du Secrétaire d'Etat. Série II. Zoologie. Tome II. Fascicules 1, 2. \* Etat Independent du Congo.

Notes on the Folklore of the Fjort (French Congo). By R. E. Dennett. With an introduction by Mary H. Kingsley. Illustrated. London: Published for the Folklore Society, by D. Nutt, 1898. \* The Author.

In Darkest Africa, or the Quest, Rescue, and Retreat of Emin, Governor of Equatoria. By Henry M. Stanley. With 150 woodcut illustrations and maps. Vol. I. and II. London: Sampson Low, Marston, Searle, and Rivington, 1890. \* Mr. Geo. Thomas.

The Last Journals of David Livingstone in Central Africa, from 1865 to his death. By Horace Waller, F.R.G.S. Vols. I. and II. With portrait, maps, and illustrations. London: John Murray. \* Mr. Geo. Thomas.

Through the Dark Continent, or the Sources of the Nile around the Great Lakes of Equatorial Africa, and down the Livingstone River to the Atlantic Ocean. By Henry M. Stanley. Vols. I. and II. With maps and illustrations. London: Sampson Low, Marston, Searle, and Rivington, 1878. \* Mr. Geo. Thomas.

King Solomon's Golden Ophir, a Research into the Most Ancient Gold Production in History. By Dr. Carl Peters. London: Leadenhall Press Limited, 1899. \* The Author.

Presented by the Union Steamship Company, Limited.

South Africa as a Health Resort. By A. Fuller, M.B. With maps and illustrations, 1898.

Emigrant's Guide to the South African Gold and Diamond Fields. With map. February, 1899.

Official Guide of the Union Steamship Line, 1899.

Handbook of Information for Passengers and Shippers, 1899.

Description and Photographs of the Union Line Steamers.

The Greater "Scot." A Visit to the "Albatross of the South." Illustrated.

A Cape Crack—Twin-Screw Royal Mail Steamer "Norman."

The Seven "G's" (Union Line Steamers). Illustrated.

Tours in South Africa. With map and illustrations.

Special No. of *The Cape Times* (No. 700, June 7, 1899), containing Pictorial Supplement of Bulawayo. \* Surgeon Major W. G. Black.

Special Transvaal Number of *Hollandia* of September 2nd, 1899. Illustrated. \* The Publishers.

*The Cape Times*. September 27th, 1899, and December 6th, 1899. \* Surgeon-Major W. G. Black.

*African Review*. Nos. 329, 333-352, 354-366, 368. \* The Publishers, through the Manchester Coal Exchange.

Marchand et la Question du Haut-Nil. Par M. Raymond Teisseire. Marseille, 1898.



Fashoda and the Bahr-el-Ghazal. By J. Howard Reed. With two sketch maps. (Reprinted from the *Manchester Evening Mail*.) Manchester: T. Sowler and Sons, Ltd., 1899. \* The Author.

Socotora. Notes, Bibliographiques réunies. Par James Jackson. Extrait de la *Revue de Géographie*. Dirigée par M. L. Drapeyron. Paris: Institut Géographique de Paris, 1892. \* Mr. Eli Sowerbutts, F.R.G.S., &c.

## AMERICA.

Histoire Chronologique de la Nouvelle France ou Canada (from 1504 to 1632). Par le Père Sixte le Tac. Edited by E. Révéillaud. Paris: G. Fischbacher, &c., 1888. \* Mr. F. Taylor.

The Routes and Mineral Resources of North Western Canada. By E. J. Dyer, F.R.G.S. Published under the auspices of the Incorporated London Chamber of Mines, by G. Philip and Son, 1898. \* Mr. S. H. Brooks, F.I.Inst.

Twelve Months in Klondike. By R. C. Kirk. With 100 illustrations, and a map. London: W. Heinemann, 1899.

Travels in Mexico, South America, etc. By G. T. Vigne, Esq. Illustrated. Vols. I. and II. London: Wm. H. Allen and Co., 1863. \* Mr. I. Chorlton.

Estudio sobre San Salvador desde el punto de vista médico, 1899. Por Prof. I. B. Juarez. \* The Author.

Relación de la Jornada y Descubrimiento del Rio Manu. Por Juan Alvarez Maldonado en 1567. Biblica Luis Ulloa Sevilla, 1899.

Bulletin Démographique Argentin. Publication du Bureau Démographique National. Year 1. No. 1, August, 1899.

Estudios Etnográficos. Primera Serie. Del Felix F. Outes. Buenos Aires, 1899. \* The Author.

La Nouvelle Pologne, Etat de Parana (Brésil). Par B. Joseph de Siemiradzki. Université Nouvelle, Institut Geographique de Bruxelles. Publication No. 1. \* The University.

## OCEANIA.

Report of the 33rd Half Yearly Meeting of the British North Borneo Company, July, 1899.

Wragge's Australasian Weather Guide and Almanac for 1898. Embracing Meteorology, Astronomy, Shipping Interests, &c. Brisbane: Sapsford and Co. \* Dr. W. G. Black.

Abstract of the Statistics of Victoria 1893 to 1898. Compiled in the Office of the Government Statist of Victoria. By Authority. Melbourne: Robert S. Brain, \* Chief Secretary, Victoria.

Tasmania and its Mineral Wealth. \* The Agent General for Tasmania.

Tasmania. Report of the Surveyor General and Secretary for Lands, for 1897-1898. \* The Agent General for Tasmania.

The Progress of the Mineral Industry of Tasmania for the quarters ending 31st March, 1898, and 30th of June, 1898, compiled by J. Harcourt-Smith, Esq., B.A., by order of the Hon. A. T. Pillinger. \* The Agent General for Tasmania.

Christmas Number of the *Canterbury Times* with numerous views of New Zealand. \* The Publishers.

## LIST OF CORRESPONDING SOCIETIES, &amp;c.

## (EXCHANGES).

## BRITISH.

Belfast. Natural History and Philosophical Society. Report and Proceedings for the Session 1898-9.

Birmingham. Philosophical Society. (Nothing received).

- Burnley. Literary and Scientific Club. (Nothing received).
- Cardiff. Naturalists' Society. (Nothing received).
- Croydon. Microscopical and Natural History Club. Proceedings and Transactions for 1898.
- Edinburgh. Royal Scottish Geographical Society. Magazine. Vol. XV., Nos. 1-12 and Index.
- Glasgow. Geological Society. (Nothing received).
- Glasgow. Philosophical Society. Proceedings, Vol. XXX., 1898-9.
- Glasgow Dock, Lancaster. Greenwood's Nautical Almanac, General and Kludnometric Tide Tables, &c., for the British Isles and adjoining Coasts, 1899.
- Hertford. Hertfordshire Natural History Society and Field Club. Transactions. Vol. X., Nos. 2, 3, 4.
- Leeds. Yorkshire Geological and Polytechnic Society. Proceedings. Vol. XIII., Part 4.
- Leeds. Yorkshire Naturalists Union. (No Transactions received).
- Leeds. Yorkshire Union of Institutes and Village Library. Report of 61st Annual Meeting, 1899.
- Leicester. Leicester Literary and Philosophical Society. Transactions. Vol. V., Parts 3, 4, 5, 6.
- Liverpool. Geographical Society. Transactions and 7th Annual Report, 1898.
- Liverpool. Geological Society. Proceedings. 40th Session, 1898-9. Vol. VIII. Part 3.
- London. Anti-Slavery Reporter, 1899. January-February, June-December.
- London. British Association for the Advancement of Science. Report of the 68th Meeting at Bristol, 1898.
- London. The Colliery Guardian, 1899. Nos. 1984-2035.
- London. East India Association. Journal, 1899. Vol. XXX., Nos. 16, 17.
- London. Emigrants' Information Office. Combined Circulars for Canada, Australia, and South Africa, 1896. Quarterly.
- Liverpool. Royal Colonial Institute. Report of Proceedings, 1898-9. Vol. XXX.
- London. Royal Geographical Society. The Geographical Journal. Vol. XIII. Nos. 1-6; XIV., 1-6.
- London. Imperial Institute Journal. 1899, January to December.
- London. Royal Gardens, Kew. Bulletin of Miscellaneous Information, 1899, January to December, with Appendices I., II., III., and IV.
- London. Review of Reviews. 1899, January to December.
- London. Royal Society of Literature. Transactions. Vol. XX., Part 4; XXI., Parts 1, 2. Report for 1898.
- London. Sell's Commercial Intelligence. Vol. II., Nos. 29-52; III., 53-62.
- London. Travel. Edited by H. S. Lunn, M.D. 1899, January to December.
- London. India Office. List of Maps, Plans, &c., of India, and other parts of Asia. Appendices, Nos. XXIX., XXX.
- London. War Office. Intelligence Division. Maps (see List of Maps). A Guide to Recent large Scale Maps (see List of Books).
- London. War Office. Catalogue of Maps. Accessions. January to December, 1899.
- London. War Office. Catalogue of Maps in Books and Periodicals contained in the War Office Library. Accessions, 1898.
- London. Accessions to the War Office Library. 1899, January to December.
- London. War Office. Geographical Index of Accessions, January to December, 1899.
- Manchester. Chamber of Commerce. Monthly Record. 1899, January to December.

- Manchester. Co-operative Wholesale Societies Limited. Annual, 1899.
- Manchester. Geological Society. Transactions. Vol. XXVI., Parts 1-9.
- Manchester. Literary and Philosophical Society. Memoirs and Proceedings. Vol. XLIII., Parts 1-5. List of Current Scientific Serial Publications received by the Principal Libraries in Manchester.
- Manchester. Museum. Owens College. Report for the year, 1898-9 (Publication No. 28). Museum, Handbooks (Publications Nos. 24, 25, 26, 27).
- Manchester. Public Free Library Committee. City of Manchester. (Nothing received.)
- Manchester. Statistical Society. Transactions. Session 1898-9.
- Manchester. Textile Recorder. 1899, Vol. XVI., Nos. 189-200.
- Newcastle-on-Tyne. Tyneside Geographical Society. (Nothing received.)
- Newcastle-on-Tyne. North of England Institute of Mining and Mechanical Engineers. Transactions. Vol. XLVIII., Parts 1-6, and Appendix.
- Oxford. Historical Atlas of Modern Europe from the Decline of the Roman Empire (Clarendon Press). Parts XXII., XXIII., XXIV.
- Penzance. Royal Geological Society of Cornwall. Transactions. Vol. XII., Part 4. (85th Annual Report).
- Salford. Museums, Libraries and Park Committee. Salford Corporation. (Nothing received.)
- Southampton. Geographical Society. (Nothing received.)
- York. Yorkshire Philosophical Society. (Nothing received.)

#### MISSIONARY.

- Edinburgh. Church of Scotland Home and Foreign Mission Record. 1899, January to December.
- Freiburg-im-Brisgau. Die Katholischen Missionen (illustrated). 1899, January to December.
- London. Baptist Missionary Society. Missionary Herald. 1899, January to December.
- London. British and Foreign Bible Society. 95th Report for Year ending March, 1899.  
     "Gleanings," 1899, January to December.  
     "Monthly Reporter," 1899, January to December.  
     "Bible House Papers," Nos. 1, 2.
- London. Church Missionary Society for Africa and the East. Proceedings. 1898-9. 100th Year.
- London. Church Missionary Intelligencer, 1899. January to December.
- London. London Missionary Society. 104th Report for the year ending March, 1899.
- London. Illustrated Catholic Missions. 1899, January to December.
- London. The Society for the Propagation of the Gospel in Foreign Parts. Report for 1898.
- London. The Mission Field, S.P.G. 1899, January to December.
- London. Universities Mission to Central Africa. "Central Africa." 1899, January to December.
- London. Wesleyan Methodist Missionary Society. (No Report received.)
- London. Wesleyan Missionary Notices. 1899, January to December.
- London. Methodist Free Church. Missionary Echo. 1899, January to December.
- Mangalore. Basel German Evangelical Mission in South-Western India. 59th Report for 1898.



COLONIAL.

- Adelaide. Royal Geographical Society of Australasia, South Australian Branch. Proceedings. Vol. III. Sessions 1888-9 to 1897-8.
- Brisbane. Royal Geographical Society of Australasia, Queensland Branch. Proceedings and Transactions. 14th Session, 1898-99.
- Brisbane. Meteorological Branch, Post and Telegraph Department, Queensland. Clement L. Wragge, Government Meteorologist. (See list of books.)
- Brisbane. Annual Report of British New Guinea. (Not received.)
- Capetown. South African Philosophical Society. (Nothing received.)
- Halifax, N.S. Nova Scotian Institute of Science. Proceedings and Transactions. Vol. IX., Part 4.
- Melbourne. Royal Geographical Society of Australasia, Victorian Branch. Transactions. Vols. XV. and XVI. Report for the Year ending December 31st, 1898.
- Melbourne. Victorian Year Book. (Not received.)
- Quebec. Geographical Society. (Nothing received.)
- Sydney. Department of Mines and Agriculture, New South Wales. Geological Survey. Records. Vol. VI., Parts II. III. Mineral Resources. Nos. 5, 6.
- Sydney. Royal Geographical Society of Australasia, New South Wales Branch. (Nothing received.)
- Toronto. Canadian Institute. Proceedings. Vol. II., Parts 1, 2.
- Wellington. Department of Lands and Survey, New Zealand. Report for the Year 1898-9.

FOREIGN.

- Alger. Société de Géographie. Bulletin, 1899. Nos. 1 to 4.
- Antwerp. Société Royale de Géographie d'Anvers. Bulletin. Vol. XXIII. Nos. 1 to 4.
- Baltimore. Johns Hopkins University. Circulars, Nos. 139 to 142. Studies in Historical and Political Science. XVII. Series. Nos. 1 to 12
- Berlin. Königlichen Museums für Volkerkunde, Ethnologisches Notizblatt. (Nothing received.)
- Berlin. Gesellschaft für Erdkunde. Verhandlungen. Vol. XXVI. Nos. 1 to 10.
- Berlin. Deutsche Kolonialzeitung. Organ der Deutschen Kolonialgesellschaft, 1899. Nos. 1 to 52; and Year Book (Jahresbericht) for 1898.
- Bern. Geographische Gesellschaft. (Nothing received.)
- Bordeaux. Société de Géographie Commerciale. Bulletin, 1899. Nos. 1 to 24.
- Boston, U.S.A. Public Library of the City of Boston. Monthly Bulletin. Vol. II. Nos. 1 to 12. 47th Annual Report for 1898-9.
- Bourg. Société de Géographie de l'Ain. Bulletin, 1899; January to December.
- Bremen. Deutsche Geographische Gesellschaft. Blätter. Vol. XXII. Nos. 1-4.
- Brest. Société Académique de Brest. Section de Géographie. Bulletin, No. 13.
- Brussels. L'Etat Indépendant du Congo, Bulletin Officiel, 1899. Nos. 1-12 and 3a. Annexe, Nos. 1-6. Annales du Musée du Congo. (See list of Books.)
- Brussels. Société Royale Belge de Géographie. Bulletin, 1899. Vol. XXIII. Nos. 1-6. Reprint from No. 2, "Expedition Antarctique Belge."
- Brussels. Le Mouvement Géographique. 1899. Nos. 1-54.
- Brussels. La Belgique Coloniale. 1899. Nos. 2-53 (46 missing).
- Brussels. Institut Colonial Internationale. Le Régime des Protectorates. Series IV. Nos. 1-2. Compte Rendu de la Session tenue à Bruxelles, Avril, 1899.

- Brussels. Société d'Etudes Coloniales. Bulletin, 1899. Nos. 2-6.
- Budapest. Société Hongroise de Géographie. Resultate der Wissenschaftlichen Erforschung des Balatonsees.
- |              |                |                |
|--------------|----------------|----------------|
| Erster Band, | Vierter Theil, | Erste Section. |
| "            | "              | Zweite "       |
| "            | "              | Sechster "     |
| Zweiter      | Erster         | "              |
| "            | Zweiter        | Erste Section. |
- Buenos Aires. Instituto Geografico Argentino. Boletin. Tome XX. 1899. Nos. 1-6.
- Buenos Aires. Direccion General de Estadistica. El Comercio Exterior Argentino. Nos. 101-102.
- Buenos Aires. Museo Nacional de Buenos Aires. Anales. Tome VI. (Second Series. Tome III.) Comunicaciones. Tome I. Nos. 3, 4, 5.
- Buenos Aires. Ville de Buenos Aires. Annuaire Statistique. VIII<sup>me</sup>. Année, 1898.
- Buenos Aires. Monthly Bulletin of Municipal Statistics. 1899. January to December.
- Cairo. Société Khédéviale de Géographie. Bulletin. Series V. Nos. 4-5.
- Cambridge, U.S.A. Peabody Museum of American Archaeology and Ethnology. Harvard University. (Nothing received.)
- Cassel. Verein für Erdkunde. (Nothing received.)
- Copenhagen. Geografisk Tidsskrift udgivet af Bestyrelsen for det kongelige danske geografiske Selskab. Vol. XV. Nos. 1-4.
- Darmstadt. Verein für Erdkunde. Notizblatt. Vol. IV. Part 19.
- Dijon. Société Bourguignonne de Géographie et d'Histoire. Mémoires. Tome XV., 1899.
- Douai. Union Géographique du Nord de la France. Bulletin. Vol. XX. Parts 1-3.
- Dresden. Verein für Erdkunde. (Nothing received.)
- Dunkerque. Société de Géographie de Dunkerque. Bulletin, 1899. Nos. 4 to 7.
- Florence. La Cultura Geografica. Anno I. Nos. 1, 2.
- Florence. Sezione Fiorentina della Societa Africana d'Italia. (Nothing received.)
- Frankfurt. Verein für Geographie und Statistik. Jahresbericht, 1896-1899.
- Geneva. Le Globe. Organe de la Société de Géographie. Vol. XXXVIII. Nos. 1, 2, and Memoirs.
- Geneva. Société des Anciens Eleves de l'École Supérieure. Bulletin. Nos. 42-45.
- Guatemala. Direccion General de Estadistica. (Nothing received.)
- Griefswald. Geographischen Gesellschaft zu Griefswald. (Nothing received.)
- Halle. Verein für Erdkunde. Mitteilungen. 1899.
- Halle. Kaiserlichen Leopoldinisch-Carolinischen Deutschen Akademie der Naturforscher. Abhandlungen. Vol. LXX., No. 1. Vol. LXXI., No. 9. Vol. LXXIV., No. 1.
- Hamburg. Geographische Gesellschaft. Mittheilungen. Vol. XV. Nos. 1, 2.
- Havre. Société de Géographie Commerciale. Bulletin. Vol. XVI. Nos. 1 to 4.
- Havre. Société de Géographie de Normandie. Bulletin. Tome XVIII. 1896-1897.
- Helsingfors. Société de Géographie de Finlande. Fennia. Nos. 14, 15.
- Helsingfors. Velenskagliga Middelanden af Geografiska Foreningen. (Nothing received.)
- Hermannstadt. Siebenbürgischen (Transylvanian) Karpathenverein. Jahrbuch XIX. 1899. (Mit vier Lichtdruckbildern als Beilage.)
- Irkutsk. Imperial Russian Geographical Society. East Siberian Section Journal. Tome XXX. No. 1.

- Jena. Geographical Gesellschaft (für Thuringen). (Nothing received.)
- Kazan. Naturalists' Society of the Imperial University of Kazan. Journal. Vol. XXXIII. Nos. 1, 2, 3. Reports, 1897-8, 1898-9.
- Königsberg. Königsberg Geographischen Gesellschaft. (Nothing received.)
- La Paz. Oficina Nacional de Inmigración Estadística y Propaganda Geográfica (Boletín de la Sociedad Geográfica de la Paz.) "Mr. A. F. Baudelot's Investigations on the American Continent." "La Estadística de la Goma elástica en Bolivia." "A Través del Amozas, por Dr. S. L. Ballesteros."
- La Plata. Dirección General de Estadística de la Provincia de Buenos Aires. Anuario Estadístico. 1896.
- La Plata. Museo de la Plata. Revista. Tome IX. 1899.
- Leipzig. Verein für Erdkunde. Mitteilungen, 1898. Wissenschaftliche Veröffentlichungen, Dritter Band, Drittes Heft. Die Insel Pemba. Vierter Band. Geographie des Mittleren Deutschland.
- Lille. Société de Géographie. Bulletin. 1899. January to December. Catalogue de la Bibliothèque. Juin, 1899.
- Lima. Sociedad Geográfica. Boletín. Vol. IX. Parts 1, 2, Apl.-Sept. 1899. Vocabulario del Idioma de las Tribus Campesinas, por E. Delgado.
- Lisbon. Sociedade de Geographia de Lisboa. Boletim. 1898-9. Vol. 17. Parts 1-2.
- Lugano. Le Comunicazioni di un Collega—Revista illustrata di Geografia e di Storia. Organo di comunicazioni fra gl'insegnanti delle Scuole Secondarie. Profr. A. Ghisleri. Year VI. Nos. 8, 9, 10.
- Lwów (Lemberg). Gazeta Handlowo-Geograficzna. 1899, Vol. V., Nos. 1 to 24.
- Lwów (Lemberg). Towarzystwo Ludoznawcze we Lwowie. Lud. Vol. V., Nos. 1 to 4.
- Lubeck. Geographischen Gesellschaft Naturhistorischen Museums. Mitteilungen. Zweite Reihe. Heft 12 and 13.
- Madrid. Sociedad Geográfica. Boletín. Tome XLI., Nos. 1 to 4. Revista de Geografía Colonial y Mercantil. Nos. 17 to 23.
- Madrid. Ayuntamiento de Madrid. Boletín. 1899. Vol. III., Nos. 142 to 157. Boletín Semanal, 1899, January 1st to December 31st. Rectificación del Empadronamiento General de Habitantes en Diciembre de 1898.
- Madison. Wisconsin Academy of Science, Arts, and Letters. Transactions. Vol. XII., Part 1. 1898.
- Marseille. Société de Géographie. Bulletin. 1890. Vol. XXIII., Nos. 1, 2, 3. XIX. Congrès National des Sociétés Françaises de Géographie. Marseille, 1898. Compte Rendu des Travaux du Congrès.
- Medellín. El Industrial. Año I., Nos. 5, 6.
- Meriden, Conn. Meriden Scientific Association. (Nothing received.)
- Metz. Verein für Erdkunde. Jahresbericht, XXI., 1898-9.
- Mexico. Sociedad de Geografía y Estadística de la República Mexicana. (Nothing received.)
- Mexico. Sociedad Científica "Antonio Alzate." Memorias y Revista. Vol. XII. Nos. 1 to 8, 11, 12.
- Milan. L'Esplorazione Commerciale. Anno XIV., Nos. 1 to 12.
- Milan. L'Universo. Geografia per Tutti. Anno IX., Nos. 1 to 24.
- Montevideo. Museo Nacional de Montevideo. Anales. Tome II., Parts 11, 12.
- Montpellier. Société Languedocienne de Géographie. Bulletin. 1899. Vol. XXII., Parts 1 to 4.
- Moscow. Geographical Section of the Imperial Society of Natural Science of the University Journal, 1899, Nos. III., IV.
- Munich. Geographische Gesellschaft in München. (Nothing received.)



- Nancy. Société de Géographie de l'Est. Bulletin. 1899. Nos. 1-4. Biography of the late J. V. Barbier.
- Nantes. Société de Géographie. Bulletin. 1899.
- Naples. "L'Oriente." Revista Trimestrale del R. Istituto Orientale in Napoli. (Nothing received.)
- Naples. Società Africana D'Italia. Bollettino. Vol. XIV., Nos. 1-12, 1895; XV., 1-6, 1896; XVI., 1-5, 1897; XVII., 1-6, 1898; XVIII., 1-4, 1899.
- Neuchâtel. Société Neuchâteloise de Géographie. Bulletin. 1899. Vol. XI.
- New York. American Geographical Society. Bulletin. Vol. XXXI. Nos. 1 to 5.
- New York. Journal of School Geography. Vol. III. Nos. 1 to 10 and Index.
- New York. Public Library (Astor, Lenox and Tilden Foundations). Bulletin. Vol. III. Nos. 1 to 12.
- New York. American Museum of Natural History. Bulletin, 1899. Vol. XI., Part II. Report for the year 1898.
- Nürnberg. Naturhistorischen Gesellschaft. Abhandlungen, XII. Band. Jahresbericht für 1898.
- Odessa. Club Alpine de Crimée. Bulletin, 1899, Nos. 1 to 12.
- Oran. Société de Géographie et d'Archéologie. Bulletin. Vol. XIX., January to December.
- Omsk. Imperial Russian Geographical Society, West Siberian Branch. (Nothing received.)
- Paris. Annales de Géographie. Published by Armand, Colin & Cie. 8th Year. Nos. 37 to 42.
- Paris. Société Académique Indo-Chinoise de France. (Nothing received.)
- Paris. Société Antiesclavagiste de France. (Nothing received.)
- Paris. Société de Géographie. Bulletin. Vol. XX., Nos. 1 to 4.
- Paris. Société de Géographie. Comptes Rendus des Séances, 1899, Nos. 1 to 7.
- Paris. Société de Géographie Commerciale. Bulletin. Vol. XXI., Nos. 1 to 10.
- Paris. Société de Spéléologie. Bulletin. Tome IV., No. 16.
- Paris. Bulletin de la Société de Topographie, 1898. 23rd Year. Nos. 1 to 12.
- Paris. Comité de l'Afrique Française. Bulletin, 1899. Nos. 1 to 12.
- Paris. "Le Tour du Monde." Published by Hachette & Cie, 1899. Nos. 3 to 52.
- Paris. Revue Géographique Internationale (M. Georges Renard, Editor), 1899. January to December. Nos. 278 to 289.
- Philadelphia. American Philosophical Society. Proceedings. Vol. XXXVIII., No. 159, January, 1899; No. 160, December, 1899.
- Philadelphia. Free Museum of Science and Art. Bulletin. Vol. II., Nos. 1, 2.
- Philadelphia. The Department of Archæology and Palæontology. University of Pennsylvania. (Nothing received.)
- Philadelphia. The Philadelphia Commercial Museum. Rules. The State of Nicaragua of the Greater Republic of Central America. By J. Niederlein. The Republic of Costa Rica. By G. Niederlein. The World's Commerce, and the United States' share of it.
- Prague. Société de Géographie tchèque à Prague. (Nothing received.)
- Rio de Janeiro. Comissão Geographica e Geologica do Estado de Minas Geraes. (Nothing received.)
- Rochefort. Société de Géographie. Bulletin, 1899. Tome XXI., Nos. 1 to 4.
- Roma. Società Geografica Italiana. Bollettino. Vol. XII., Nos. 1 to 12.
- Roma. Rivista Geografica Italiana. 1899, Nos. 1 to 10.

(Presented by Signor Luigi Bodio.)

- Roma. Institut International de Statistique. Tome XI., Parts I. and II.
- Rouen. Société Normande de Géographie. Bulletin, 1899. January to December.
- San Francisco. Southern Pacific Railway. "Sunset." January, April, June, July, September to December. "Abroad." Vol. VII. Nos. 1-12, 1898-1899.
- San Francisco. Geographical Society of the Pacific. (Nothing received.)
- St. Nazaire. Société de Géographie. Bulletin. Vol. XV. 1898-1899.
- St. Petersburg. Imperial Russian Geographical Society, Journal. Vol. XXXV. Nos. 1-6 and Report for 1898.
- Santiago. Deutsche Wissenschaftlichenvereins zu Santiago de Chile. Verhandlungen. Band IV. Heft 1.
- Shanghai. China Branch of the Royal Asiatic Society. Journal. Vol. XXX., 1895-6.
- Shanghai. Imperial Maritime Customs, China I.: Statistical Series. No. 2, Customs Gazette, Nos. 121-123, January to September, 1899; Nos. 3 and 4. Part 1, Returns of Trade and Trade Reports for 1898; Part 2, Reports and Statistics for each Port. II.: Special Series. Medical Reports for Half-year ended 31st March, 1899, 57th issue.
- Stockholm. Svenska Sällskapet för Antropologi och Geografi. 1899. Nos. 1-4.
- Stuttgart. Württembergische Verein für Handelsgeographie. (Nothing received.)
- Tokio. Geographical Society. Journal of Geography. Vol. XI. Nos. 121-132.
- Toulouse. Société de Géographie. Bulletin. 1899, Vol. XVIII. January to October.
- Tours. Société de Géographie. Revue. 1899. No. 1.
- Tucuman. Oficina de Estadística de la Provincia de Tucuman. Anuario, 1898.
- Upsala. The Geological Institution of the University of Upsala. Bulletin. Vol. IV. Part I. (No. 7, 1898.) Meddelanden. No. 24.
- Vienna. K.-K. Geographische Gesellschaft. Mittheilungen, Vol. XLII. Nos. 1-12. Abhandlungen, Vol. I. Nos. 1-5.
- Vienna. Verein der Geographen an der Universität Wien. Bericht über das XXIII. und XXIV. Vereinsjahr, 1896-97 u. 1897-98.
- Vienna. K.-K. Naturhistorisches Hofmuseum. (Nothing received.)
- Washington. National Geographic Magazine. Vol. X. Nos. 1-12.
- Washington. U. S. Coast and Geodetic Survey. Report for the year ending June, 1897.
- Washington. U. S. Geological Survey. C. D. Walcott, Director. Nineteenth Annual Report. Parts I. to VI., and Atlas to Part V.
- Washington. U. S. Geological Survey. Monographs, XXIX., XXXI., and Atlas, XXXV.
- Washington. Smithsonian Institution. (No Report received.) No. 1146, Rising of the Ground, by R. Bell; No. 1147, Crater Lake, Oregon, by J. S. Diller; No. 1148, The Function and Field of Geography, by J. S. Keltie; No. 1149, Letters from the Andrée Party; No. 1150, Scientific Advantages of an Antarctic Expedition, by John Murray and others.
- Washington. U. S. National Museum. Annual Report for the year ending June, 1897. Part 1.
- Washington. U. S. Department of Agriculture. Report of the Chief of the Weather Bureau for 1897-98.
- Washington. U. S. Department of Agriculture. Monthly Weather Review, 1899, January to December, and Annual Summary. Bulletins, Nos. 24, 26, 28, and F.













G  
7  
M3  
v.14-15


Manchester Geographical  
Society, Manchester, Eng.  
Journal

PLEASE DO NOT REMOVE  
CARDS OR SLIPS FROM THIS POCKET

---

UNIVERSITY OF TORONTO LIBRARY

---

The image shows the front cover of an old book. The cover is decorated with a traditional marbled paper pattern, often called a 'stone' or 'shell' pattern. This pattern consists of large, irregular, rounded shapes in shades of brown, tan, and cream, separated by a network of fine, branching veins in yellow, red, and black. The overall effect is organic and textured. At the bottom center of the cover, there is a small, rectangular white paper label. On this label, the number '14015 47' is printed in a simple, black, sans-serif font. The book's spine is visible on the right side, showing a similar marbled pattern. The corners and edges of the cover appear slightly worn and aged.

14015 47